LightShip™ User's Guide

Version 3.0

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About this Manual

The *LightShip User's Guide* describes how to build a LightShip™ application. This manual is organized mainly by task. Use it to get acquainted with LightShip and then refer to it as you work. Use the *LightShip Reference Guide* to look up commands, actions, and functions.

Read *Chapter 1: Getting Started* to find out how to install and start LightShip. Then run through the on-line demonstrations and work through the tutorial, *Learning LightShip*.

This manual assumes that you are familiar with your computer, know how to use a mouse, and have some familiarity with Microsoft® Windows™. It is organized as follows:

- *Chapter 1: Getting Started* explains how to start the program. It also shows you some basic things about using LightShip.
- *Chapter 2: Applications, Screens and Files* explains how to work with files and create application screen backgrounds.
- *Chapter 3: Objects, Tools, and Modes* describes the tools and objects you use to display information and the different modes that are available to work in. It also covers general information that applies to all objects, such as creating and editing. The following chapters describe how to create each object in detail.
- *Chapter 4: Displaying Data* explains how to display and format data on a LightShip screen. It also explains how to color variances in the data.

- *Chapter 5: Text, Draw Objects, and Images* explains how to enter text for screen headers and labels; create draw objects, such as rectangles and polygons; and display images, such as Clipboard, PCX, or BMP files.
- *Chapter 6: Creating Charts* explains how to create graphs of data.
- *Chapter 7: Creating Menu Objects* explains how to create menu-bar menus and special hidden menu objects.
- *Chapter 8: Creating HotSpots* describes how to create buttons that perform actions.
- *Chapter 9: Defining Actions* describes how to define actions and functions.
- *Chapter 10: Using Variables and Parameters* explains how to store values in variables, assign new values while the program is running, and pass information between LightShip files.
- *Chapter 11: Running and Testing an Application* explains how to run and debug your application.
- *Chapter 12: Using Dynamic Data Exchange* (DDE) describes how to use DDE to exchange information with other Windows applications.

☞ Shortcuts are shown in a notebox in the margin.

Conventions Used in this Manual

We use some standard formatting conventions in this manual to help you learn to use LightShip more quickly.

- Menu commands usually follow the menu name they are on. For example:

  1. Choose File Open.

  means "choose the Open command on the File menu."

- A task that is about to be described is shown in bold characters next to a shadowed purple square (■). Procedures are shown as numbered steps. Choices or parts of a numbered step are shown next to a small purple square (▪)

- Examples are shown in bold monospaced characters.

- Names that you need to substitute are shown in angle brackets (< >). For example:

  `<pathname>`

  means "type in the drive and directory appropriate for your site."

- Key names are spelled out in capital letters. A plus sign (+) between two key names indicates that you must press both keys at once. For example:

  1. Press ALT+F.

  indicates that you should hold down the ALT key and press the F key. A slash (/) between two keys means you can press either one or the other. For example, UP/DOWN means you can use the UP or the DOWN arrow keys.

- The DIRECTION keys are the four arrows on your computer's keypad. The name of the key refers to the direction in which the arrow points: the UP key, the DOWN key, the RIGHT key, or the LEFT key.
- New terms, action names, variable names, and book titles are italicized.
- Because the Capture level is a limited version of the Browse level, most references to the Browse level are also meant to include the Capture level.

☞ **Important**

Important information, notes, and performance hints are shown next to a hand to make them stand out.

⁂

Chapter 1

Getting Started

Pilot™ LightShip is an object-oriented application development package for creating Executive Information Systems (EIS). An EIS provides access to the latest corporate, departmental, and external data. LightShip allows you to build an EIS application in less time than ever before, without writing any code.

This chapter shows you how to start the program, use the menu bar, manipulate the window, and get on-line help.

Before You Start

Besides this manual, your LightShip package should include:

- *LightShip Reference Guide*
- *Learning LightShip* tutorial
- LightShip program disks 1 and 2

What You Need to Use LightShip

To run LightShip you need the following:

- A personal computer with an Intel® 80286, 80386, or higher processor. We recommend a 386-class computer or higher.

- DOS 3.1 or higher.

- Microsoft Windows version 3.0 or higher. LightShip does not support Windows real mode.

- A minimum of 2 megabytes of memory. We recommend at least 4 megabytes of memory.
- About 5 megabytes of disk space if you install all the files. About 1 megabyte of disk space if you do not install the demonstration files. We recommend using a hard disk with at least 80 megabytes of disk space.
- Color EGA, VGA, 8514/A or Hercules® graphics card, or compatible video graphics adapter and appropriate monitor. We recommend a VGA or other Windows-compatible graphics card.
- A Microsoft Mouse or compatible pointing device.

Compatible Software

LightShip can display ASCII text files and data from other Windows 3.0 applications that use DDE. LightShip can also display graphic images copied from the Windows Clipboard or from files in PCX or BMP format.

Installing LightShip

LightShip expects you to install the program from your A drive at the DOS command line. If you install LightShip from your B drive, type:

```
assign a = b
```

before starting the installation procedure.

- **To install LightShip, insert the LightShip program disk 1 into your A drive and type:**

  ```
  a:install
  ```

  The installation procedure prompts you for the information it needs.

Technical Support

If you have problems or questions, call the Pilot Technical Support Hotline (617) 338-HELP.

Starting LightShip

You can start LightShip from Windows or the DOS command line.

Starting LightShip from Windows

- **To start LightShip from Windows:**

1. Start the Windows File Manager.
2. Select the LightShip drive and directory.
3. Double-click on the file LS.EXE.

- **To start LightShip and optionally specify a file to open:**

1. Choose File Run from the Program Manager or the File Manager.
2. Type the command to start LightShip, optionally followed by a filename.

   When you specify a filename, LightShip opens that screen. For example, to open the ADVAN.LSF file in C:\DEMO, you would type:

   ```
                         ^ INTERNAL\
   c:\ls\ls.exe c:\demo\advan.lsf
   ```

   You must specify the pathname of the LightShip program if it is not defined by your DOS PATH command. If you use the File Manager Run command, you must also specify the pathname of the file. You do not need to type the file extensions (.EXE and .LSF).

Displaying the LightShip Icon

■ **To display the LightShip icon:**

1. Select the program group in which you want to put the icon.

2. Choose File New.

   The New Program Object dialog box appears.

3. Select New Program Item.

4. Choose OK.

   The Program Item Properties dialog box appears.

5. In the Description text box, type:

   ```
   LightShip
   ```

6. Type the command to start LightShip in the Command Line text box. For example, if LightShip is in C:\LS, you would type:

   ```
   c:\ls\ls.exe
   ```

7. Choose OK.

   The icon appears in the program group window you selected.

■ **To start LightShip from the icon:**

Double-click on it.

Starting LightShip from DOS

- **To start LightShip from the DOS command line:**

Type the command to start Windows, followed by the command to start LightShip (optionally followed by a filename). For example:

```
win c:\ls\ls c:\demo\advan.lsf
```

Starting LightShip at the Browse Level

All the methods described previously start LightShip at the Author level, which you use to develop applications. There are two other levels from which you run applications, Browse and Capture. The Browse level allows access to Windows, while Capture does not.

- **To start LightShip at the Browse level without access to the Author level:**

Type the command to start LightShip followed by the /b argument and a filename. For example:

```
c:\ls\ls /b c:\demo\advan.lsf
```

☞ Press F4 to move between Author and Browse levels.

- **To start at the Browse level and allow access to the Author level:**

Type the command to start LightShip followed by the /ab argument and a filename. For example:

```
c:\ls\ls /ab c:\demo\advan.lsf
```

- **To start LightShip at the Capture level:**

Type the command to start LightShip followed by the /c argument and a filename:

```
c:\ls\ls /c c:\demo\advan.lsf
```

The LightShip Window

When you start LightShip, a new, blank screen appears in the window unless you specified a file to open as an argument on the command line. Figure 1-1 shows LightShip when you first start it at the Author level.

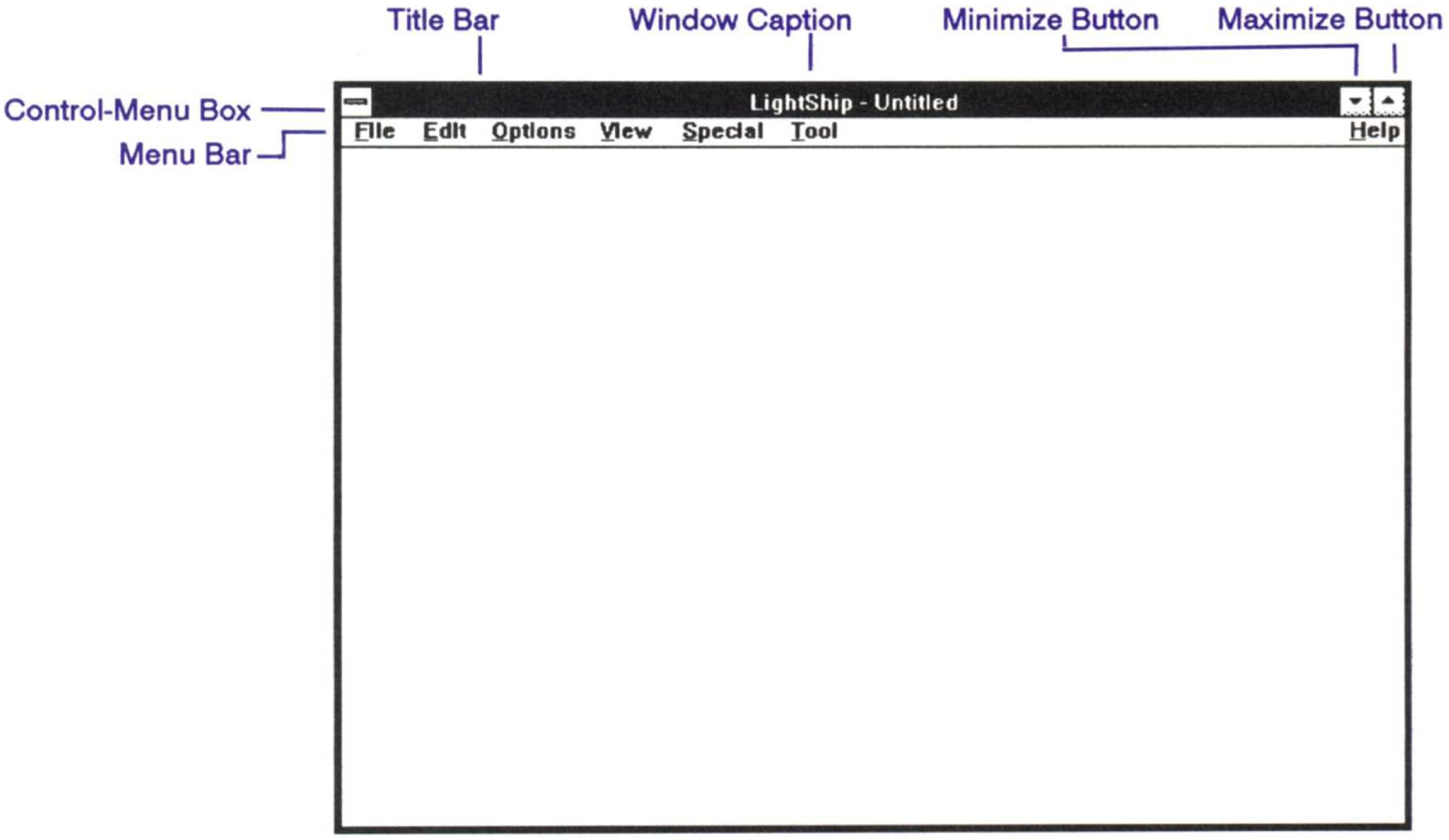


Figure 1-1 The LightShip Window

The menu bar contains the names of the LightShip menus and the Control menu. The Control menu contains commands to resize, move, maximize, minimize, close the LightShip window, and switch to the Task List. Display it by clicking on the Control-menu box above the File menu or by pressing ALT+SPACEBAR.

All of the features of the LightShip window are standard Windows features. For complete information about how to use Windows, see the *Microsoft Windows User's Guide*.

Choosing Menu Commands

To choose a menu command with the mouse:

1. Click on the menu name.

   The menu appears on the screen.

2. Click on the command.

To choose a menu command using the keyboard:

1. Press the ALT key and the underlined letter of the menu name. For example, ALT+F displays the File menu.

   The menu appears on the screen.

2. Press the underlined letter of the command.

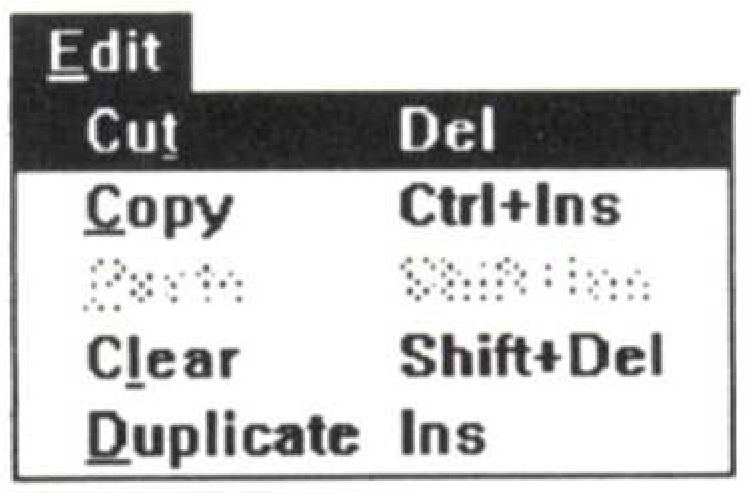
   For example, you can press the O key when the File menu appears to make the File Open dialog box appear.

To issue a command without displaying the menu:

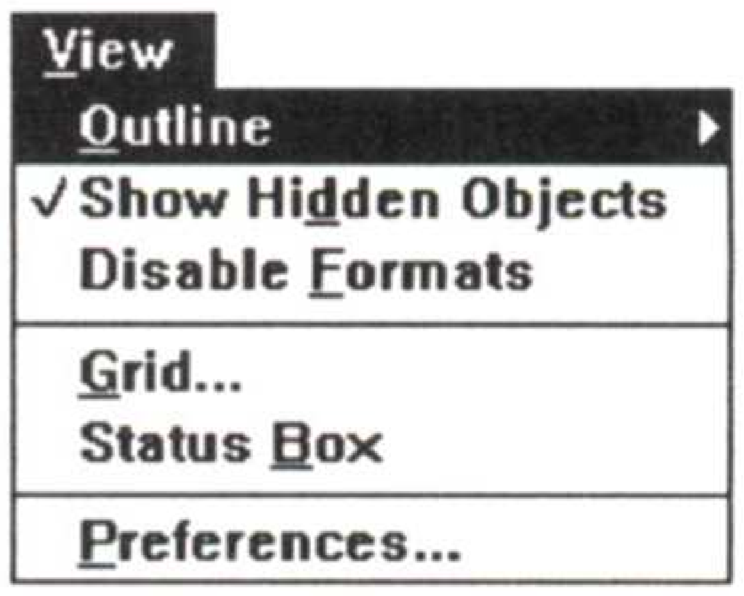
Press the shortcut key(s) shown next to the command on the menu.

For example, press the F8 key to execute the File Open command.

Menu Conventions



A dimmed menu command means the command is not available at this time. For example, if nothing is on the Clipboard, you cannot choose the Edit Paste command.



A check mark next to a menu command means the command is *on*. To turn the command off, choose it again. For example, when Show Hidden Objects is on, all objects on the screen are outlined.

A menu command followed by ellipses (...) means a dialog box or another screen will appear, asking you for more information.

A triangle at the right side of a menu command leads to a cascading menu, which lists additional commands. For example, the Outline command leads to the menu shown in Figure 1-2.

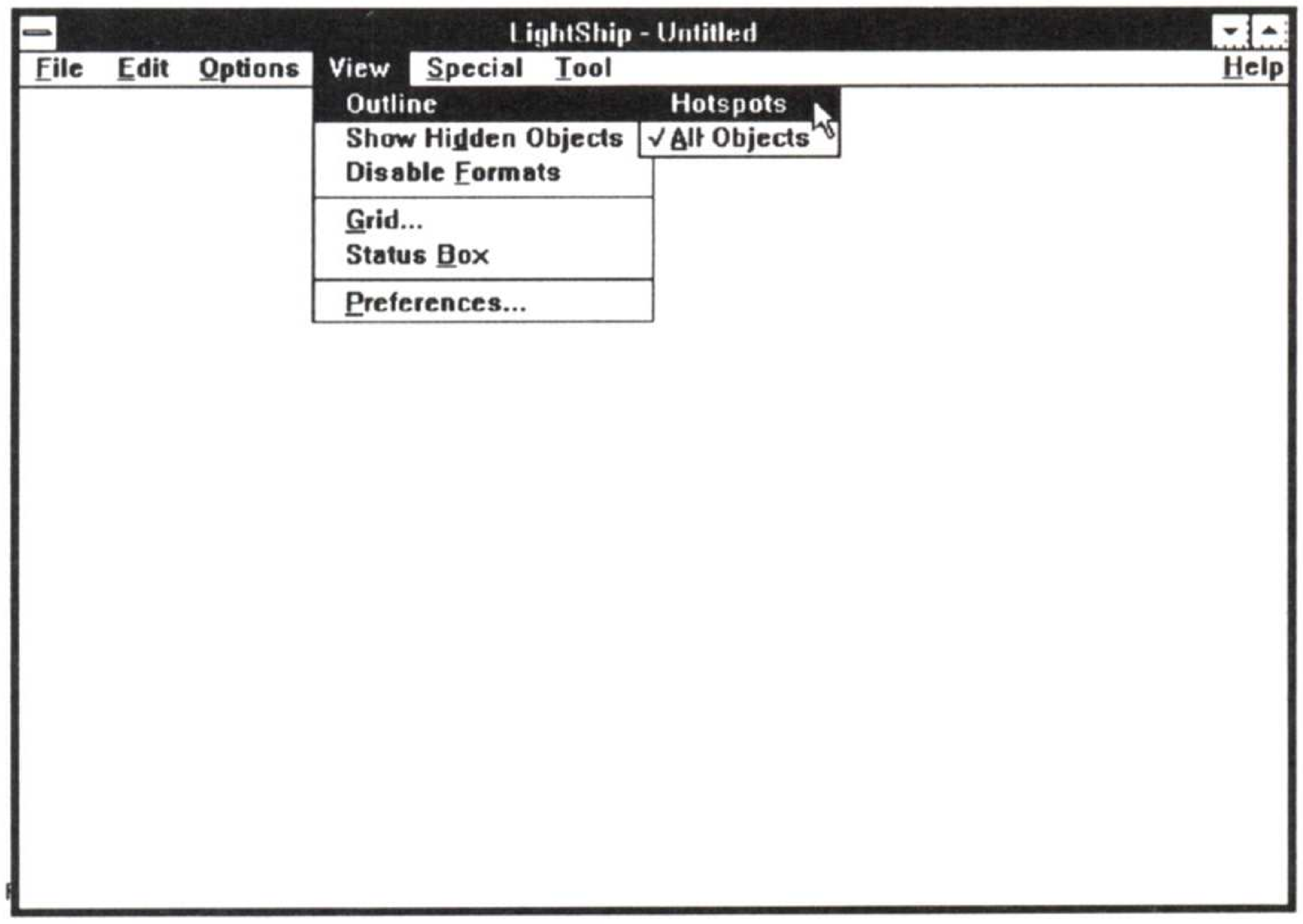


Figure 1-2 A Cascading Menu

- **To display a cascading menu with the mouse:**

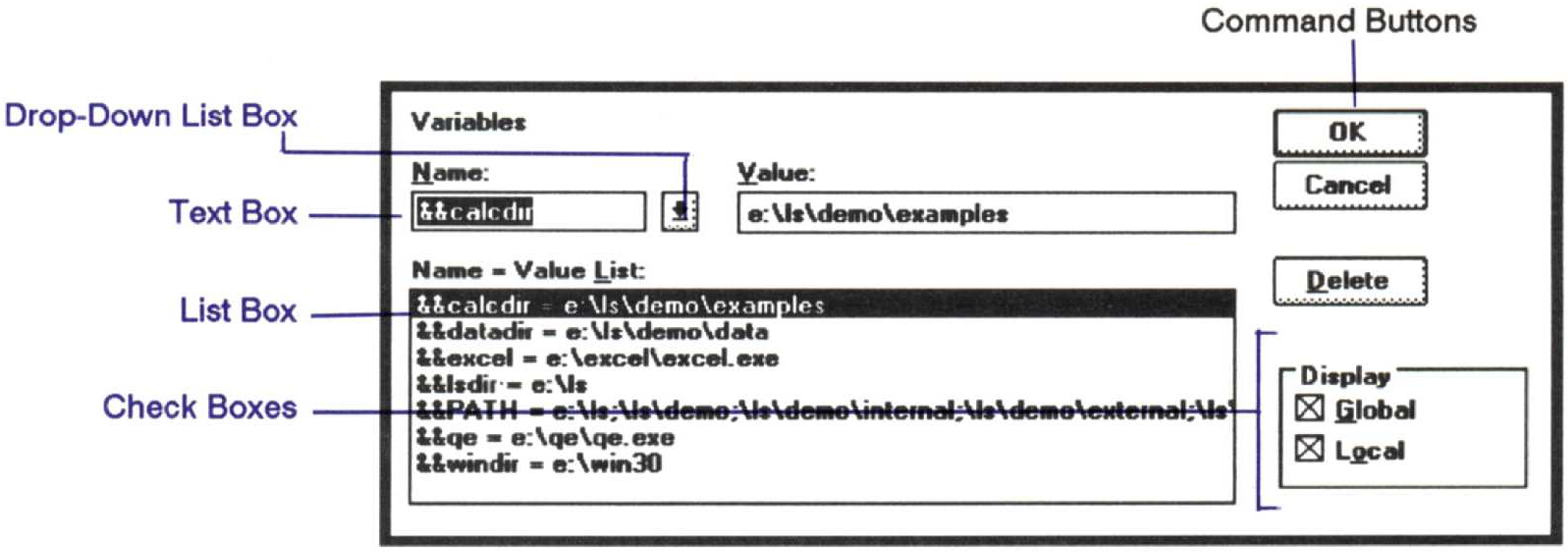
  Click on the menu item next to the triangle.

- **To display a cascading menu with the keyboard:**

  Position the cursor on the menu item next to the triangle and press RIGHT ARROW or ENTER.

Using a Dialog Box

LightShip displays a dialog box when it needs more information. A typical dialog box is shown in Figure 1-3.



Name: &&calcdir

Value: e:\ls\demo\examples

Name = Value List:

```
&&calcdir = e:\ls\demo\examples
&&datadir = e:\ls\demo\data
&&excel = e:\excel\excel.exe
&&lsdir = e:\ls
&&PATH = e:\ls;\ls\demo;\ls\demo\internal;\ls\demo\external;\ls
&&qe = e:\qe\qe.exe
&&windir = e:\win30
```

☒ Global
☒ Local

Figure 1-3 A Dialog Box

Using Buttons

A command button, also called a push button, is a round-cornered button labelled with the action that it carries out. Command buttons initiate an immediate action.

- **To carry out a command and close a dialog box:**

  Choose the OK button or press ENTER.

- **To cancel a command and close a dialog box:**

  Choose the Cancel button or press ESC.

A check box is an option that can be turned on or off. An X appears in the box when the option is turned on; when it is off, it is blank.

- **To turn a check box on or off:**

  Click in it.

There is another button type not shown in Figure 1-3. These are option buttons. These buttons exist in groups and only one can be on at a time. When an option button is on, it turns black.

The Chart Type dialog box, shown in Figure 1-4, shows a group of option buttons.

Option Buttons

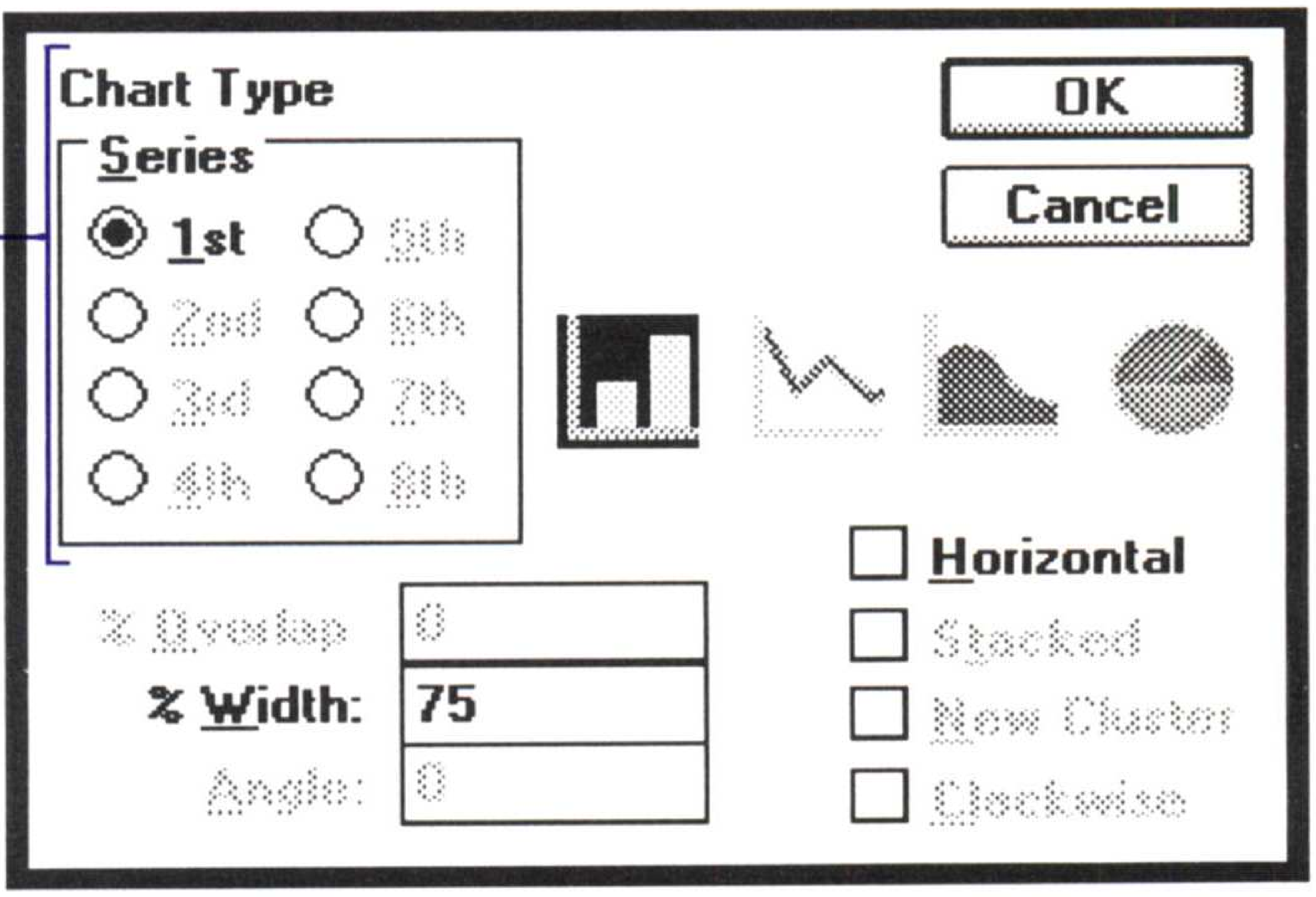


Chart Type

Series

● 1st ○ 5th
○ 2nd ○ 6th
○ 3rd ○ 7th
○ 4th ○ 8th

% Overlap: 0
% Width: 75
Angle: 0

☐ Horizontal
☐ Stacked
☐ New Cluster
☐ Clockwise

Figure 1-4 Option Buttons

- **To turn a check box on or off:**

  Click in it.

Using Text Boxes

A text box is a rectangle into which you type information. When you open a dialog box, if there is text in a text box, it is usually selected and any text you type replaces it.

- **To edit text:**

  Click in the text box at the insertion point.

  The cursor changes to a flashing vertical bar. The text you type begins at the insertion point.

- **To type into an empty text box:**

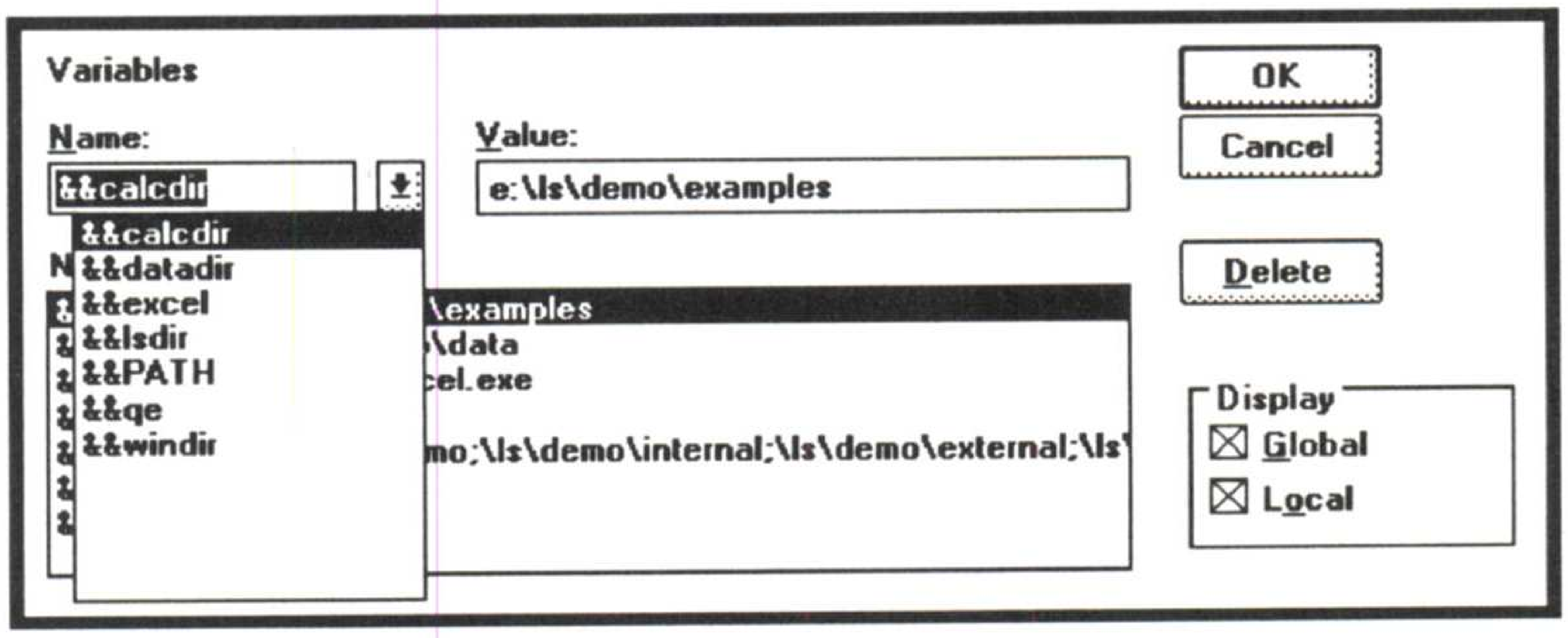
  Click in it and type.

For more information on editing keys, see "Editing Text in a Text Box."

Using Drop-Down List Boxes

Drop-down list boxes display a list when you click on the arrow. You can then select an item from the list by clicking on it. Your selection is displayed in the text box next to the drop-down list box.

Figure 1-5 shows the list that appears when you click on the drop-down list box in the Variables dialog box.



Variables

Name: &&calcdir

Value: e:\ls\demo\examples

Display: ☒ Global ☒ Local

Figure 1-5 A Drop-Down List

Using List Boxes

☞ A quick way to choose an item from a list is to double-click on it.

A list box displays available choices for the command. You can scroll through the list by clicking the down arrow or by pressing ALT+DOWN ARROW.

- **To select an item from a list:**

  Click on the item and then choose the command button you want. Or double-click on the item to choose it and complete the command.

Using the Keyboard in a Dialog Box

Use the following keys to move around and select options:

ALT+underlined letter	Moves to the option with the underlined letter.
ENTER	Carries out the command and closes the dialog box; it is the same as choosing OK.
ESCAPE	Cancels the operation and closes the dialog box.
KEYBOARD LETTER	When a list box is selected, moves to the first item starting with that letter. Then it cycles through the items starting with that letter.
TAB	Moves to the next option; for example, the next button or text box.
SHIFT+TAB	Moves to the previous option.
UP/DOWN ARROWS	Scrolls through a list box one item at a time.
PGUP/PGDN	Scrolls through a list box several items at a time.
SPACEBAR	Acts like the mouse on the selected option; for example, it turns a check box on and off.

Editing Text in a Text Box

Use the following keys to edit text in a text box:

BACKSPACE	Moves back one space and erases the character to the left of the cursor.

DEL	Erases the character to the right of the cursor.
RIGHT/LEFT ARROW	Moves to the right or left in the line.
HOME	Moves to the beginning of the line.
SHIFT+UP	Selects the previous line.
SHIFT+END	Selects from the current position to the end of the line.
SHIFT+HOME	Selects to the beginning of the line.
SHIFT+LEFT/RIGHT ARROW	Selects text to the left or right of the insertion point as you press the LEFT or RIGHT ARROW key.
SHIFT+DOWN	Selects the next line.
SPACE	Erases all text in a text box if you press it before typing.
END	Moves to the end of the line.

Resizing the Window

If the window is maximized, the Maximize box in the upper-right corner shows two black arrows; you cannot resize the window until you click the Maximize box or choose Control Restore.

■ **To resize the LightShip window with the mouse:**

1. Drag the window border.

   The cursor changes to a two-headed arrow that points in the direction in which you can drag the window. As you drag the border, you will see a shadow border that indicates the size of the window.

2. Release the mouse when the window is the size you want.

■ **To resize the LightShip window with the keyboard:**

1. Choose Control Size.

   A shadow border outlines the window and a four-headed arrow appears in the middle of the window.

2. Use the DIRECTION keys to indicate the direction in which you want to increase or decrease the size of the window.

   The shadow border indicates the new size of the window.

3. Press the ENTER key when the window is the size you want.

Maximizing the Window

■ **To increase the window to its maximum size:**

Click on the Maximize box or choose Control Maximize.

Minimizing the Window

■ **To reduce LightShip to an icon:**

Click on the Minimize box or choose Control Minimize.

■ **To open the minimized LightShip program:**

Double-click on the icon.

Restoring the Window

■ **To restore the window to its previous size:**

Choose Control Restore. If the window is maximized, click in the box in the upper-right corner.

Moving the Window

- **To move the window with the mouse:**

1. Position the pointer on the title bar and drag the window.
2. Release the mouse when the window is placed where you want it.

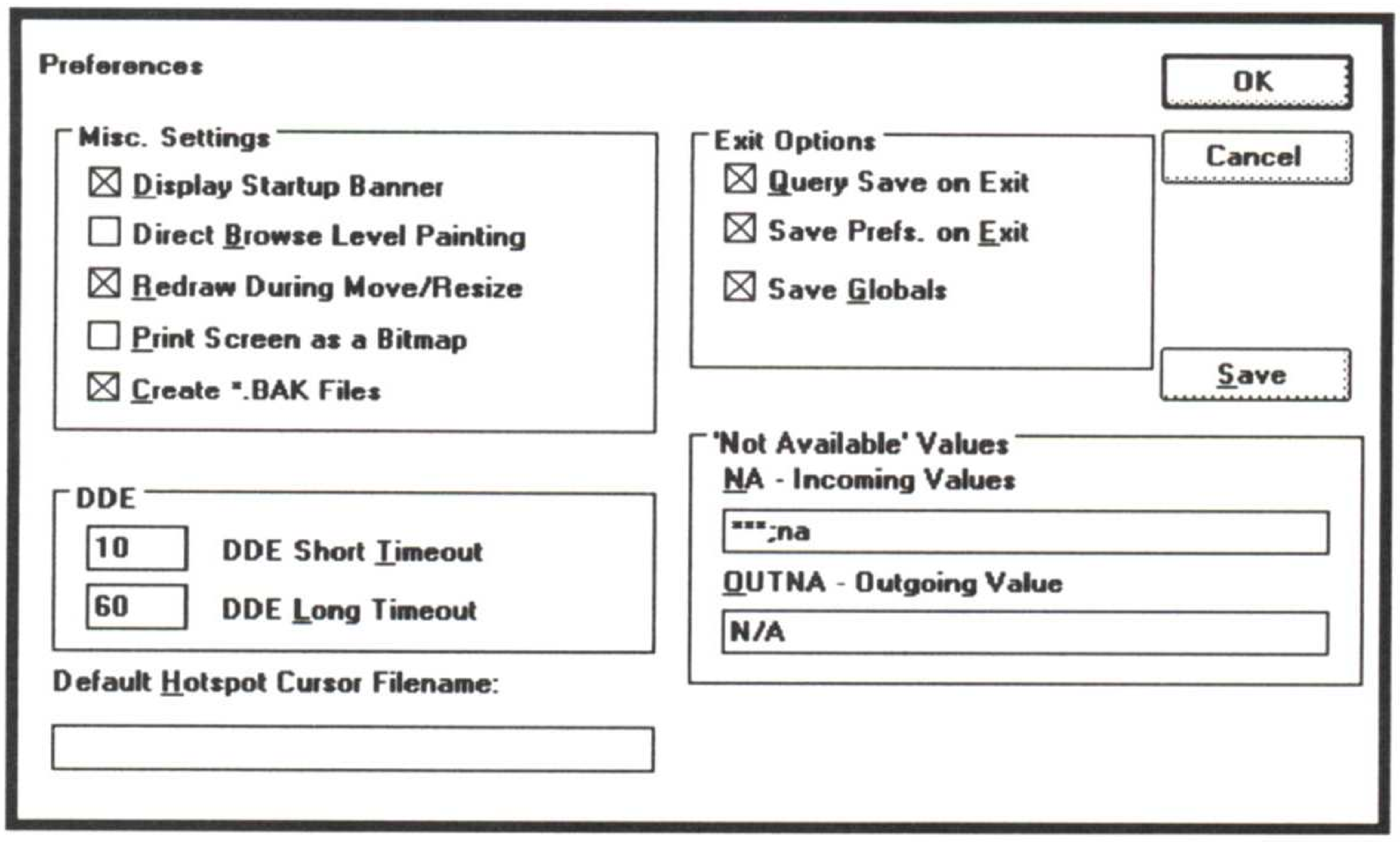
- **To move the window with the keyboard:**

1. Choose Control Move.
2. Use the DIRECTION keys to indicate the direction in which you want to move the window.
3. Press the ENTER key when the window is where you want it.

Setting Preferences

You can specify certain system settings by choosing View Preferences. This opens the Preferences dialog box, shown in Figure 1-6. These settings, which allow you to customize LightShip's performance, are automatically saved in your LS.INI file if you turn on Save Prefs. on Exit. You can also turn on Query Save on Exit so that LightShip asks you if you want to save the settings when you exit.

For more information about the options in the Preferences dialog box, see the *LightShip Reference Guide*. For more information about LS.INI, see *Appendix B: LS.INI Options*.



Preferences

Misc. Settings
☒ Display Startup Banner
☐ Direct Browse Level Painting
☒ Redraw During Move/Resize
☐ Print Screen as a Bitmap
☒ Create *.BAK Files

Exit Options
☒ Query Save on Exit
☒ Save Prefs. on Exit
☒ Save Globals

DDE
10 DDE Short Timeout
60 DDE Long Timeout

'Not Available' Values
NA - Incoming Values: ***;na
OUTNA - Outgoing Value: N/A

Default Hotspot Cursor Filename:

Figure 1-6 Setting System Preferences

Using Help

The Help menu is a quick way to look up on-line information about commands. LightShip Help works very much like Windows Help.

If this is the first time you have used on-line Help, choose Using Help from the Help menu to learn how to use it.

■ To get help:

1. Choose Help on the menu bar or press ALT+H.

2. Choose the Help category you want or press the underlined letter of the category.

   Or press DOWN ARROW or UP ARROW to reach the Help category you want and then press ENTER.

   A list of the items in the category appears.

3. Choose the item you want to know more about.

Quitting LightShip

■ **To quit LightShip:**

Choose File Exit or Control Close.

If you have made changes to the screen that you have not saved to a file, a dialog box asks if you want to save the changes.

- Choose Yes to exit and to save the file.
- Choose No to exit and not save the file.
- Choose Cancel to cancel the Exit.

⁂

Chapter 2

Applications, Screens, and Files

This chapter introduces the components of an application and describes how to create screen backgrounds and work with files.

Overview of an Application

You use the following components to build a LightShip application:

- Screens
- Objects
- Actions
- Variables
- A database or spreadsheet application

LightShip applications usually consist of a series of data-driven screens that are dynamically linked. You can navigate through the data by clicking on hotspots and menu items.

You begin to build an application by creating a screen. You then create objects and place them on each screen the way you want them to appear in the application. These objects can display data or images, or they can define menus or hotspots, which contain actions.

If you have no user-defined menus, you can completely hide the menu bar by turning on View Hide Menu Bar. If you have user-defined menus, turning on View Hide Menu Bar hides the LightShip Browse menus and displays the user-defined menus only.

For more information about creating menus, see *Chapter 7: Creating Menu Objects*.

Adding and Hiding Scroll Bars

You can add scroll bars on any window for which there is information that needs scrolling. You can also hide scroll bars. Scroll bars are closely associated with document objects. For more information about adding and hiding scroll bars, see *Chapter 4: Displaying Data*.

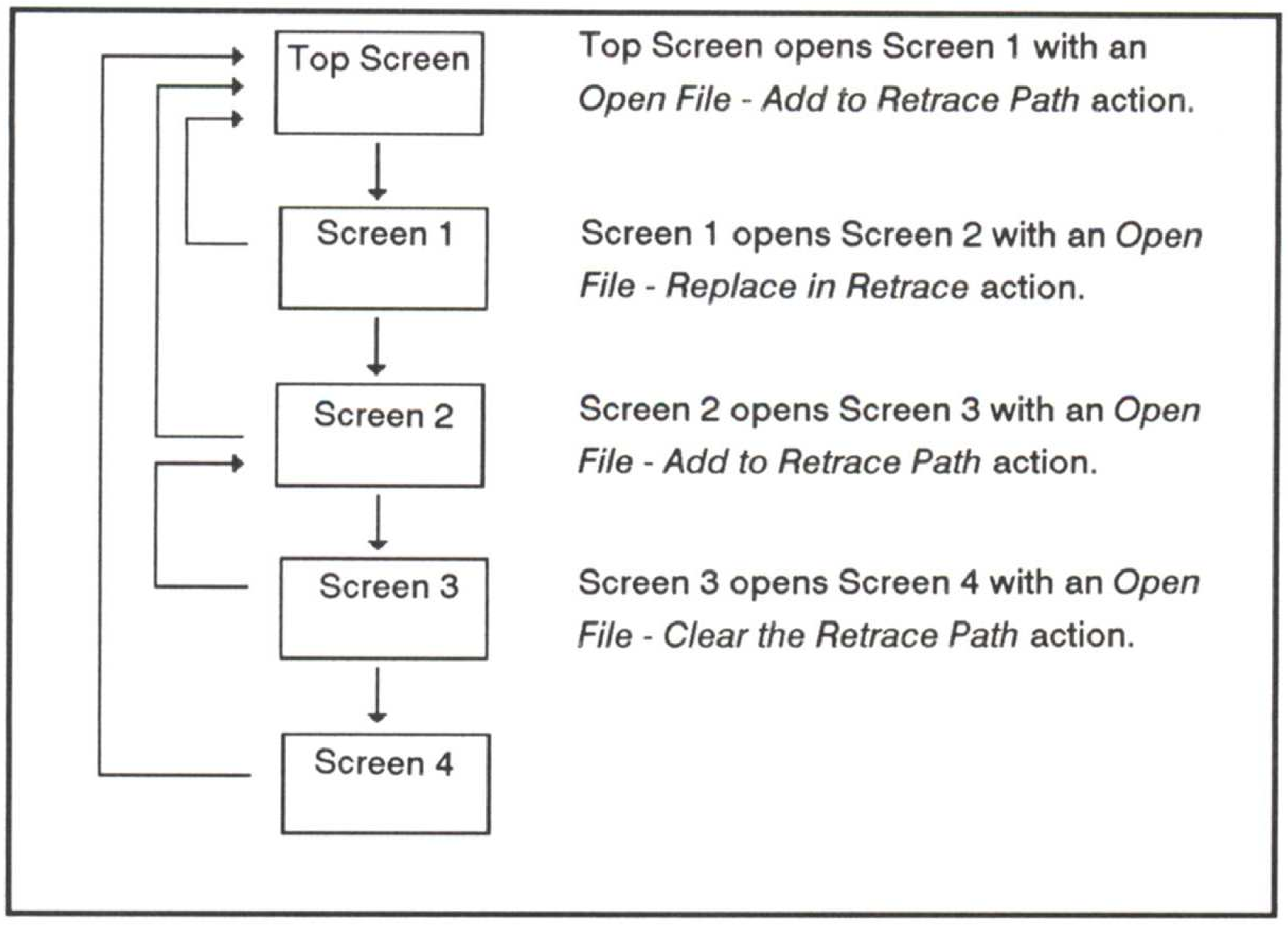
Saving a Window Position and Size

You can save a window position and size so that your screen always displays as it was last saved to the file. If your application uses multiple screens, set the size and position for the first screen. Then choose Save Window Position for that screen, but not for subsequent screens. The called screens open with the same window position and size, which makes screen repainting faster and more visually pleasing.

Saving a Window Position and Size

■ **To save a window position and size:**

1. Position and size the window by dragging it with the mouse or using the Control Size command.
2. Choose Options Save Window Position.



Top Screen opens Screen 1 with an *Open File - Add to Retrace Path* action.

Screen 1 opens Screen 2 with an *Open File - Replace in Retrace* action.

Screen 2 opens Screen 3 with an *Open File - Add to Retrace Path* action.

Screen 3 opens Screen 4 with an *Open File - Clear the Retrace Path* action.

Figure 2-10 Return in Retrace Path Actions

Passing Local Variables

Local variables are deleted any time you open another screen. Keep in mind that this occurs when you perform a ***Return in Retrace Path*** action, so if you want to preserve local variables, you must explicitly pass them by typing them in the Action Parameters dialog box.

Returning to an Instance of a Screen

You can save the current state of a screen and reserve a place in the retrace path list for that screen by saving it with the *Save File - Temporary Name* action. If you then open another screen with *Open File - Add to Retrace Path*, a ***Return in Retrace Path*** from the called screen opens the temporary file. Temporary files are deleted when you leave LightShip.

LightShip updates the list of files to display the files in the selected drive and directory.

2. Type in the filename or double-click on a file in the list.

   LightShip provides a default extension of .LSF. This extension is recommended but not required.

3. Choose OK.

Saving a Screen with a New Name

■ **To save an existing screen with a different name than the original file:**

Choose File Save As or press SHIFT+F9.

The File Save As dialog box appears and prompts you for a filename (see Figure 2-5). The name last given to the file is displayed in the Filename text box.

1. Type the filename or choose a filename in the list.
2. Choose OK.

Saving a Screen as a Temporary File

You can save the current state of a screen by saving it with the *Save File - Temporary Name* action. Temporary screens are deleted when you leave LightShip.

Saving a temporary file reserves a place in the retrace path. After saving a screen as a temporary file, if you open a screen with an *Open File - Add to Retrace Path* action, a *Return in Retrace Path* action from the called screen returns to the temporary screen.

For more information on the *Save File - Temporary Name* action, see the *LightShip Reference Guide*.

The LightShip PATH Variables

To initialize a global variable every time you start LightShip, define it in LS.INI. For more information about LS.INI options, see Appendix B.

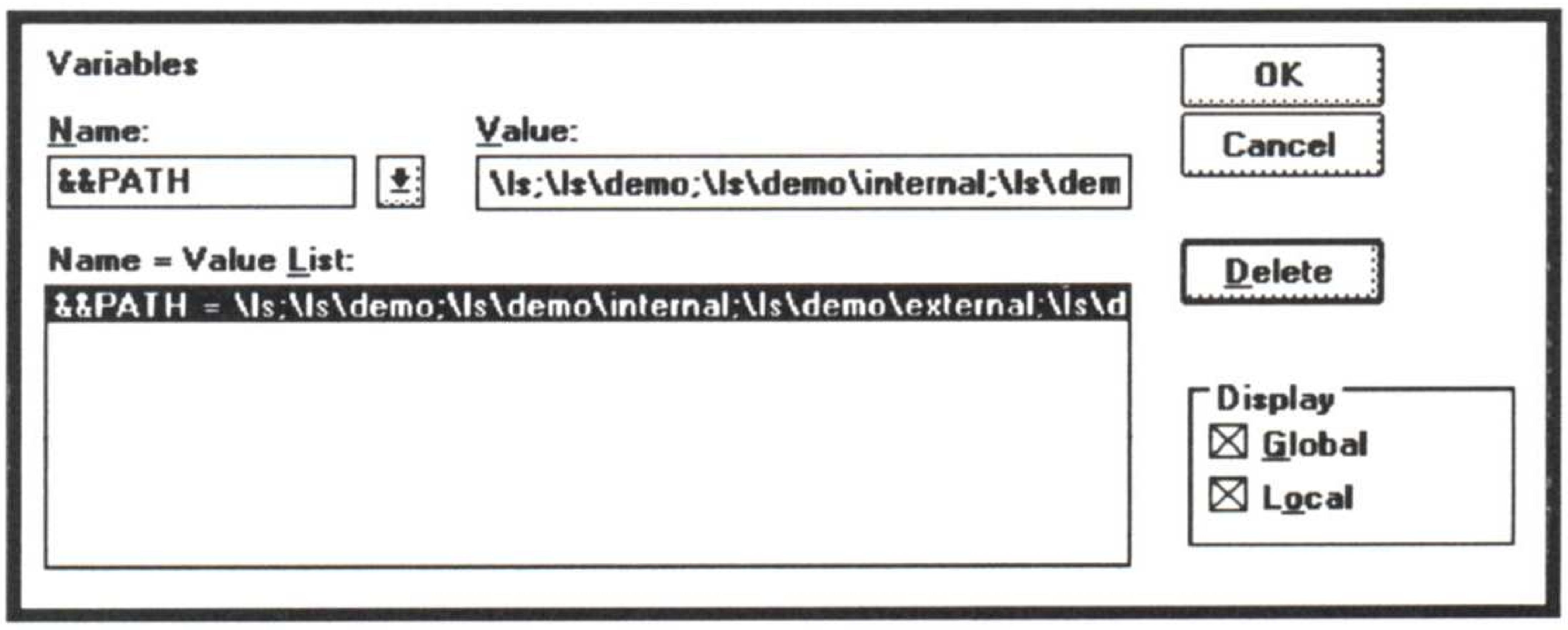
LightShip provides two variables that you define within a LightShip application to store a search path:

- _&PATH a local variable
- &&PATH a global variable

To define a PATH variable:

1. Choose Special Variables or press SHIFT+F4.

   A dialog box appears.



Name: &&PATH

Value: \ls;\ls\demo;\ls\demo\internal;\ls\dem

Name = Value List:

&&PATH = \ls;\ls\demo;\ls\demo\internal;\ls\demo\external;\ls\d

☒ Global

☒ Local

Figure 2-11 Defining a LightShip Path Variable

2. Type the variable name in the Name text box.

3. Type the search path in the Value text box. For example:

```
c:\ls;c:\ls\demo;c:\ls\tutorial
```

4. Choose OK.

The LightShip DOS Environment Variable

The LIGHTSHIP DOS environment variable is a local variable you define at the DOS command line to store a LightShip search path.

To define this variable, type:

```
set lightship = <pathlist>
```

Note that you can also set defaults for objects in DEFAULT.LSF. For example, if you want all text objects to default to a blue background with yellow text, you can assign this in DEFAULT.LSF. For more information about assigning attributes to objects, see *Chapter 3: Objects, Tools, and Modes*.

Creating DEFAULT.LSF

■ **To create a default screen template:**

1. Choose File New.
2. Assign the defaults for the screen.
3. To assign defaults to objects, choose the object type from the Tool menu and choose the menu items that you want as defaults.

   For more information about defining a specific object, see the chapter about that object type.

4. Choose File Save As and type the pathname and filename. For example:

   ```
   c:\ls\default.lsf
   ```

5. Choose OK.

Editing DEFAULT.LSF

You can edit DEFAULT.LSF at any time just like any other screen.

Multiple Templates

You can only have one DEFAULT.LSF file, but you can use any screen as a template. Just open that screen and then save it with a new name.

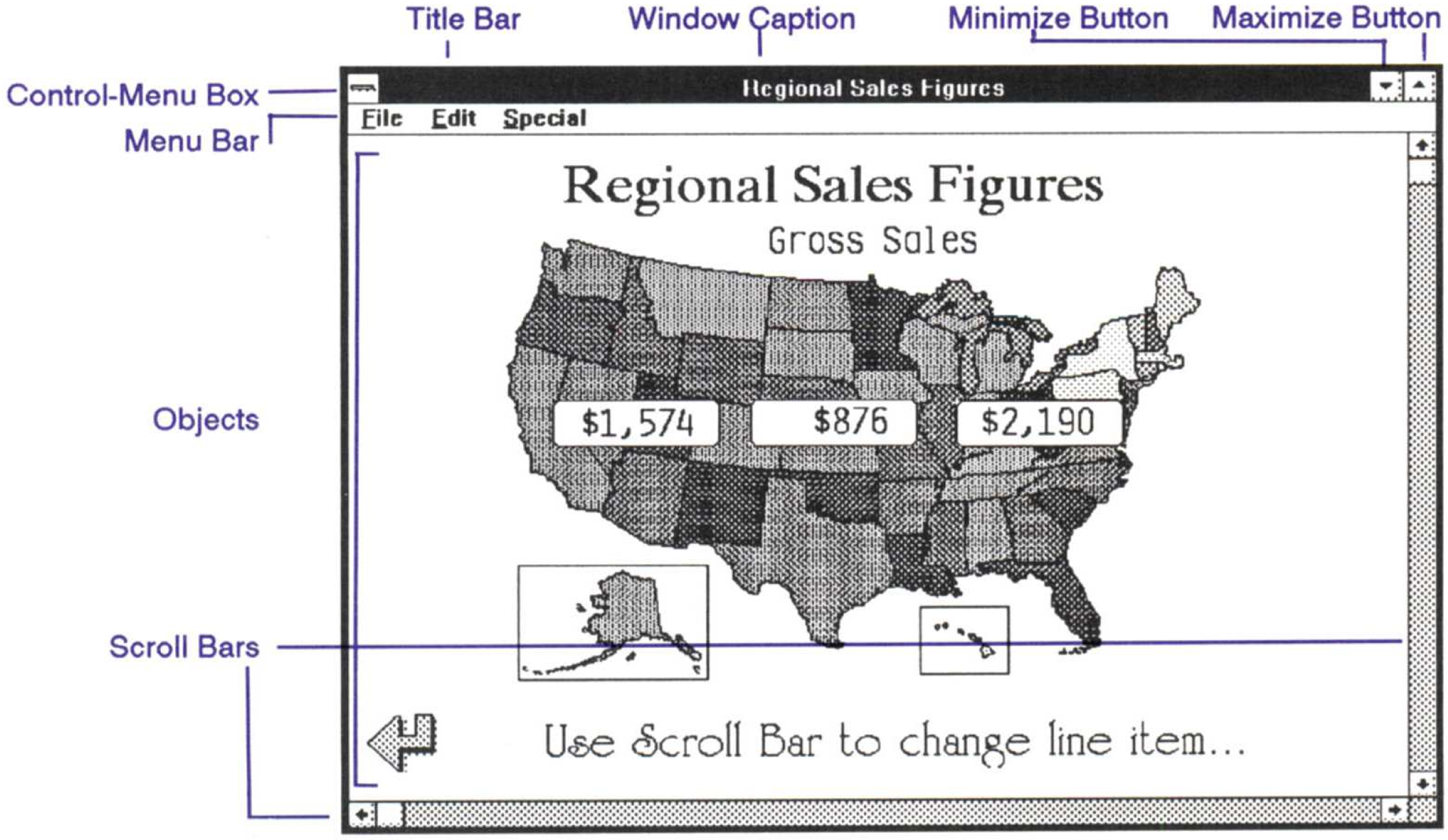


Figure 2-1 A LightShip Screen

Coloring a Screen Background

■ **To color a screen background:**

1. Choose Options Screen Color.

   A dialog box appears.

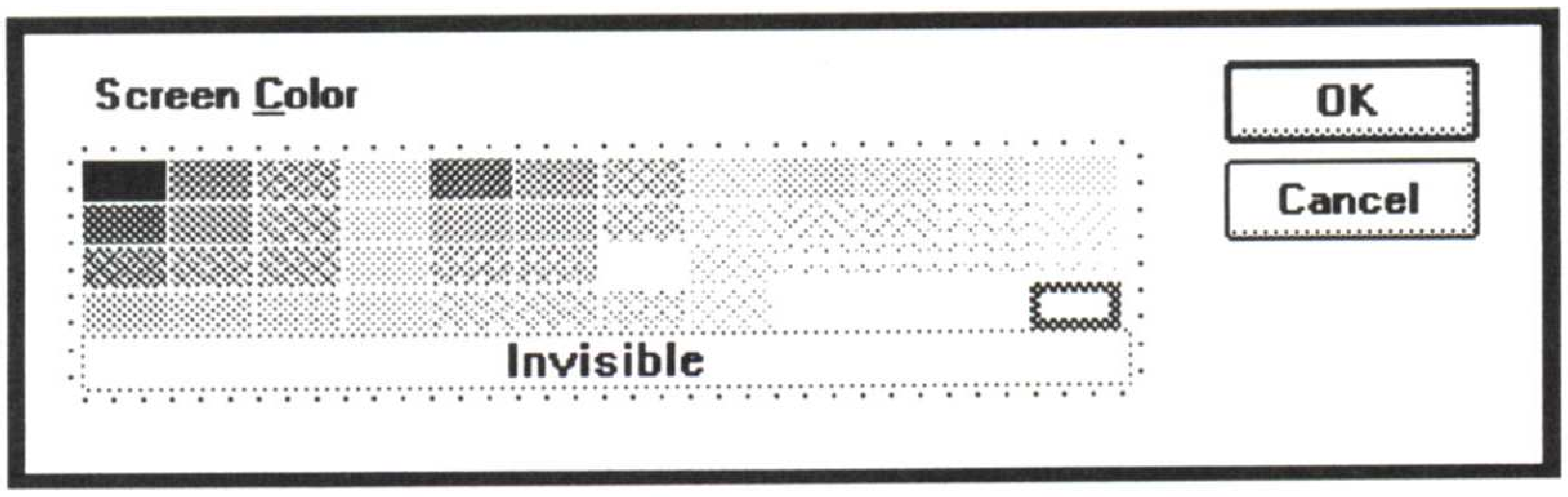


Figure 2-2 Coloring the Screen Background

2. Select a color.

Deleting a Password

■ **To delete a password:**

1. Choose Options Unprotect Author Level or Options Unprotect Browse Level.

   The Password dialog box appears.

2. Type the password again.
3. Choose OK.

Printing a Screen

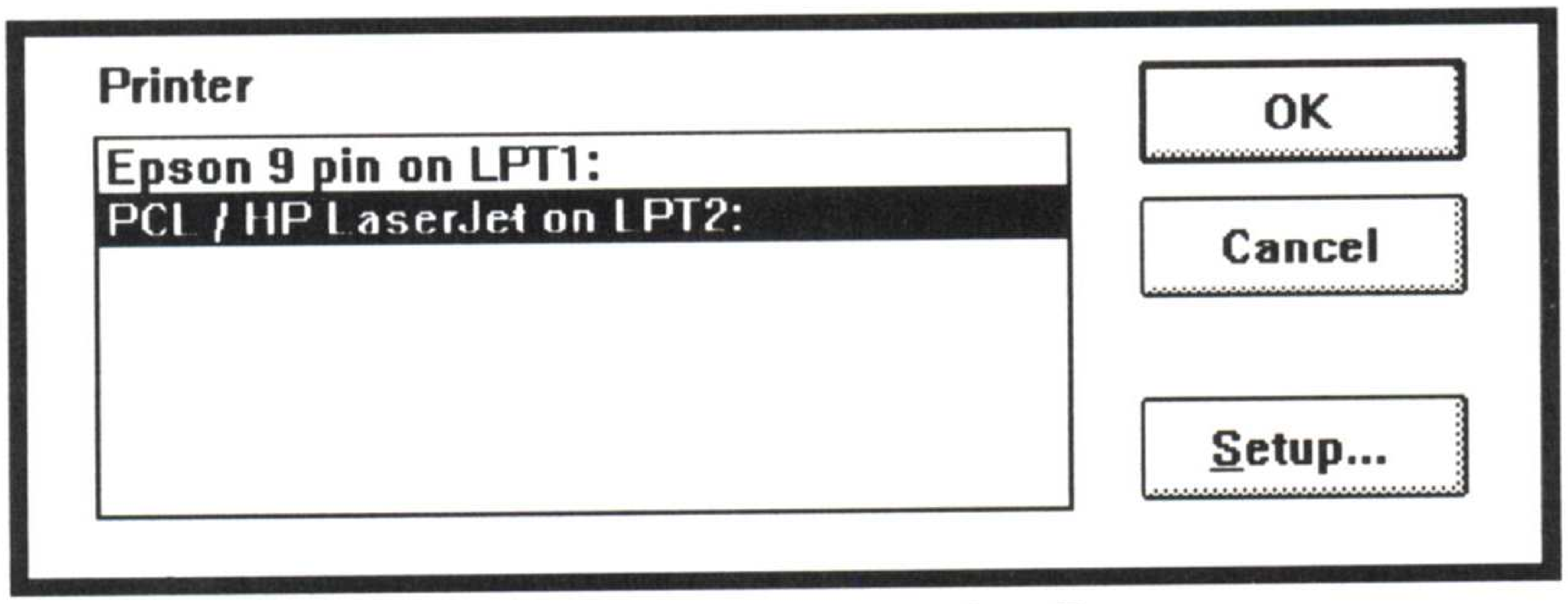
You can print the screen displayed in the window. Before printing, make sure you have specified your printer settings. The printer settings stay in effect until you change them.

Setting Up a Printer

■ **To set up a printer:**

1. Choose File Printer Setup.

   A dialog box appears. All the printers installed in Windows display in the dialog box. Figure 2-7 shows the Printer dialog box.



Epson 9 pin on LPT1:
PCL / HP LaserJet on LPT2:

Figure 2-7 The Printer Dialog Box

2. Choose the printer that you want to set up.

You can also create a pop-up screen using the POSITION function. For more information, see Chapter 11 of the *LightShip Reference Guide*.

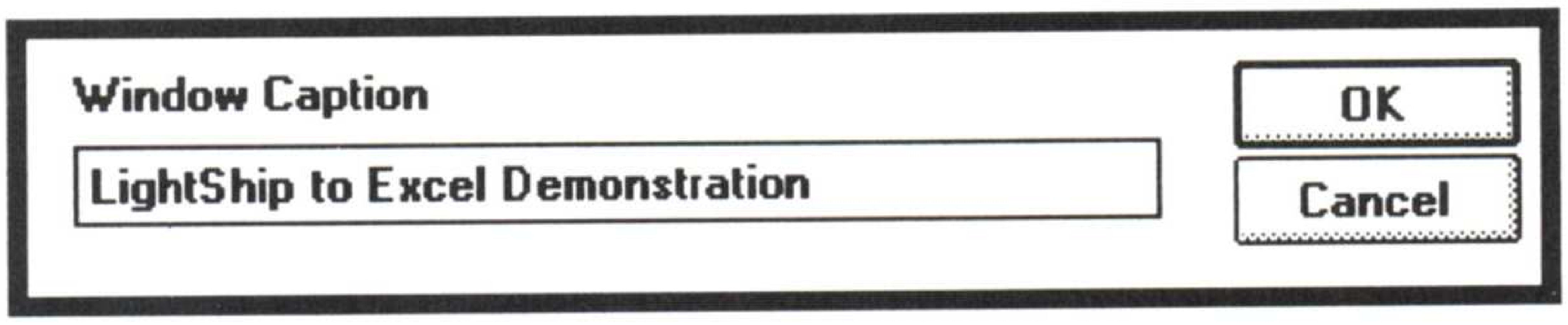
Adding a Window Caption

You can add a window caption that appears on the title bar of your application window at the Browse level. Window captions are also used in the Retrace Path dialog box. The window caption shown in Figure 2-4 appears on the screen in Figure 2-3.

■ **To add a window caption:**

1. Choose Options Window Caption.

   A dialog box appears.



Window Caption: LightShip to Excel Demonstration

Figure 2-4 Adding a Browse Level Window Caption

2. Type in the caption.
3. Choose OK.

Hiding the Menu Bar

By default, a screen appears at the Browse level with a menu bar that displays the LightShip Browse menus (File, Edit, and Special). User-defined menus, if there are any, display on the menu bar to the right of the LightShip menus.

save screens in a particular state to which you want to return via the retrace path. For more information about temporary files, see page 2-19 of this chapter and Chapter 10 of the *LightShip Reference Guide*.

Opening a Screen File

When you open a file, LightShip displays a screen in the window. Opening a file automatically closes the screen currently displayed in the window. If you have made changes to the screen that you have not saved to a file, a dialog box asks if you want to save the changes.

You open a file from the File Open dialog box as shown in Figure 2-8. All the .LSF files in the current directory are listed in the Files list box on the File Open dialog box. The current directory name appears above the list of files. All the subdirectories in the current directory are listed in the Directories box, followed by alternate drives, for example, [-a-], [-c-].

Opening a Screen File

■ **To open a screen file:**

1. Choose File Open or press F8.

   The dialog box shown in Figure 2-8 appears.

   - **To change drives:**

     Choose the drive letter.

   - **To change directories:**

     Choose the subdirectory name or the symbol [..] to go to the next higher level directory.

     LightShip updates the list of files to display the files in the selected drive and directory.

Saving a Screen

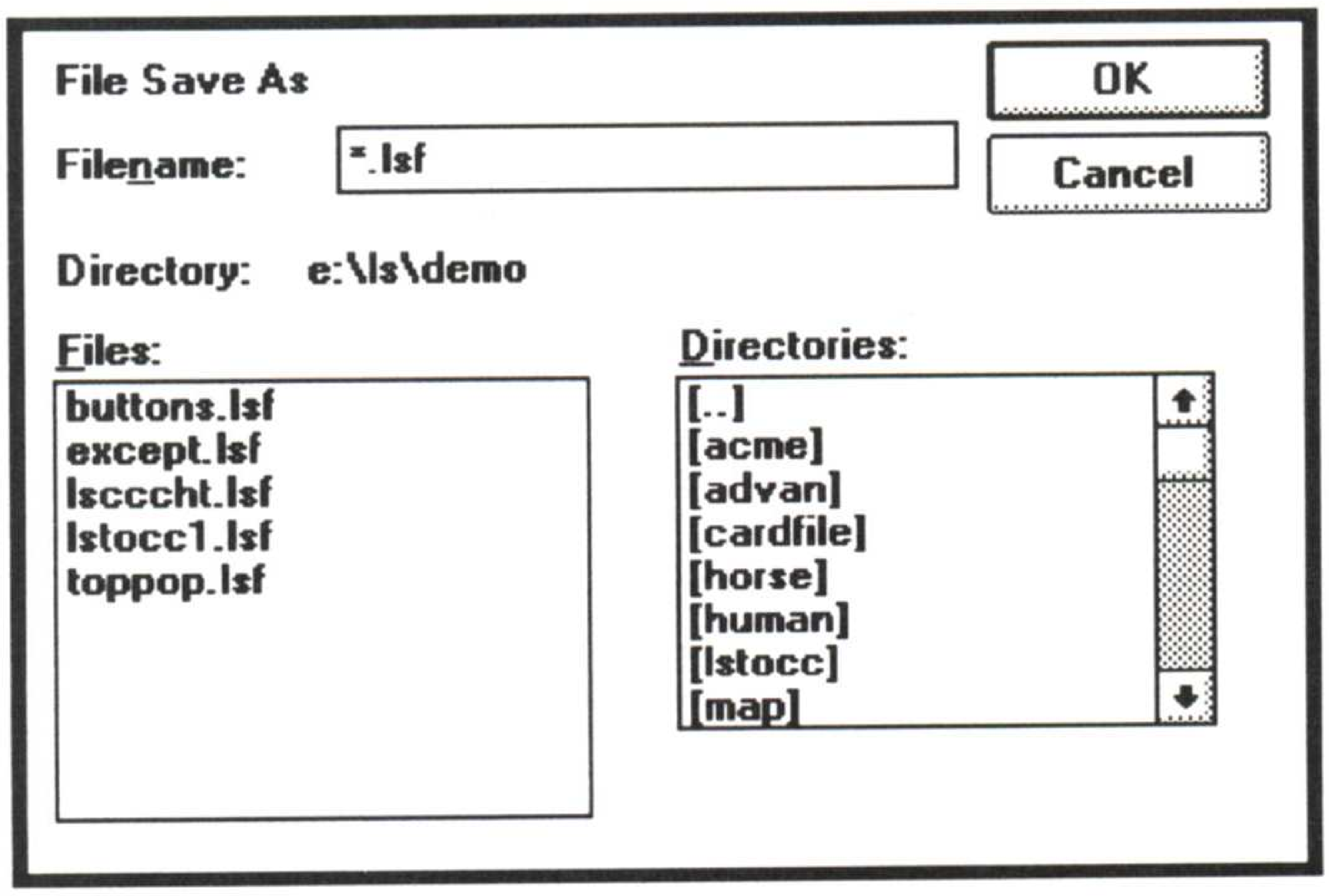
The first time you save a file, the File Save As dialog box opens and prompts you for a filename. All subsequent saves take place without the dialog box appearing.

When you save a file, LightShip saves the previous version of the file with a .BAK extension, unless you turn off Create .BAK file in the Preferences dialog box.

Saving a Screen

- **To save a screen:**

1. Choose File Save or press F9.



File Save As

Filename: *.lsf

Directory: e:\ls\demo

Files:

buttons.lsf
except.lsf
lscccht.lsf
lstocc1.lsf
toppop.lsf

Directories:

[..]
[acme]
[advan]
[cardfile]
[horse]
[human]
[lstocc]
[map]

Figure 2-5 The File Save As Dialog Box

- **To change drives:**

Choose the drive letter.

- **To change directories:**

Choose the subdirectory name or the symbol [..] to go to the next higher level directory.

4. Choose OK.

How One Screen Leads to Another

When an application is running, a screen either leads to another screen or lets you exit from the application. The screen that opens another is the *calling* screen; the screen that is opened is the *called* screen. You call screens by creating hotspot or menu objects that perform an Open File action.

The following actions open another screen:

- Open File actions
- *Return in Retrace Path* action

The retrace path is an important part of these actions.

What is the Retrace Path?

LightShip keeps a list of all the files you open within a session, in the order in which you open them. This list is the *retrace path*. The retrace path allows you to find and open files easily and is most often used to return to a previous screen. The retrace path has a maximum of 32 entries. New entries are added to the end of the list, while entries from the beginning of the list are removed. For example, the 33rd entry is added to the end of the list and the first entry is removed, and so on.

You can display the retrace path and choose a screen in the list to open it, or you can clear the list. Note that if you open a screen from this dialog box, it does not get added to the end of the retrace path list, but the retrace path list rebuilds from the screen you opened in the list. For example, if you opened Newstrack Top Menu from the Retrace Path dialog box shown in Figure 2-9 and then opened Newstrack National News, Newstrack National News would replace Newstrack Foreign News in the list.

Creating a New Screen

■ To create a new screen:

Choose File New or press SHIFT + F8.

If you have made changes to the current screen that you have not saved to a file, a dialog box asks if you want to save the changes.

- Choose Y for yes.
- Choose N for no.
- Choose Cancel to return to the screen.

Creating a Default Screen Template

You can create a default screen template by setting up a screen and saving it with the filename DEFAULT.LSF. The attributes you define in this file will appear on every new screen you create after that. You might want to create a default screen with a company logo and Return button, for example. DEFAULT.LSF must be in the current directory or defined in a search path.

You can set the following screen attributes in the file DEFAULT.LSF:

- Screen color
- Window size and position
- Menu bar
- Scroll bars
- Boiler-plate objects
- Specific object attributes on the object menus

The attributes you set in DEFAULT.LSF can be changed on any screen once it is created.

of the retrace path list. This is useful if you want to return sequentially up through the calling screens.

The *Open File - Clear the Retrace Path* action opens a file and erases all entries in the retrace path list except the first one. Use this if you want to return directly to the top screen from the screen being opened.

The *Open File - Replace in Retrace Path* action opens a file and overwrites the calling filename with the called filename in the retrace path list. For example, in Figure 2-9, if Newstrack Top Menu had an *Open File - Replace in Retrace Path* action on a hotspot that opened Newstrack Foreign News, when Newstrack Foreign News opened, Newstrack Top would disappear from the retrace path. When Newstrack Foreign News executed a *Return in Retrace Path*, it would open the Demonstration Top Menu.

The Return in Retrace Path Action

A *Return in Retrace Path* action opens the file above itself in the list. For example, in the retrace path shown in Figure 2-9, if Newstrack Foreign News has a *Return in Retrace Path* action on a hotspot, it would open Newstrack Top Menu (assuming Newstrack Top Menu opened it with an *Open File - Add to Retrace Path* action). The retrace path is like a stack; the first one in is the last one out.

Figure 2-10 shows how each Open File action opens a screen using *Return in Retrace Path*. A *Return in Retrace Path* action from the called screen opens the file indicated by the arrow.

Creating Passwords

You can protect access to a screen by creating passwords for the Author and Browse levels. These passwords affect only the screen where you define them. When a screen is password-protected at the Author level, anytime you open it at that level, you are prompted to enter the password. When a screen is password-protected at the Browse level, you are not prompted for the password when you open it from the Author level; you are only prompted when you open the screen at the Browse level. Be careful to remember the password, because the screen is unaccessible without it.

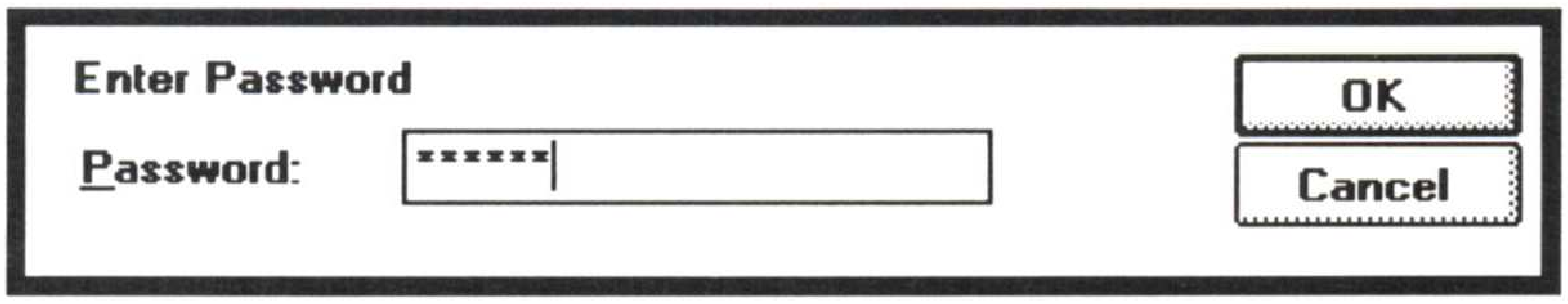
Passwords can be up to 20 alphanumeric characters and are not case-sensitive.

Defining a Password

■ **To define a password:**

1. Choose Options Protect Author Level or Options Protect Browse Level.

   A dialog box appears.



Enter Password

Password: ******

Figure 2-6 Defining a Password

2. Type the password.

   It appears as asterisks.

3. Choose OK.

   You are prompted to confirm the password.

4. Type it again and choose OK.

Defining a Search Path

In general, we recommend keeping all files associated with an application in one directory, for example, screen, text, and graphic files. However, you still might open files and applications in a variety of directories. A *search path* specifies drives and directories where files are stored. To make pathing information easier to maintain, LightShip provides several ways of defining search paths. LightShip searches the drives and directories in the order in which they are listed in the search path.

You can define a search path in a special local or global LightShip variable, a LightShip DOS environment variable, or you can use the DOS PATH command. All of these are described more fully below.

The Search Path Check Box

Turn on the Search Path check box, found on most file dialog boxes, if you have one or more search paths defined. This tells LightShip to search the paths you've defined. We recommend using this option. If the Search Path check box is off, LightShip searches only the directory specified in the dialog box.

When Search Path is on, LightShip searches for files in the current directory or in a search path you have defined. LightShip searches for files in the following order:

1. Current working directory
2. Path defined by the local LightShip variable, _&PATH
3. Path defined by the global LightShip variable, &&PATH
4. Path defined by the LIGHTSHIP environment variable
5. Path defined by the DOS PATH command

3. Choose the Setup button.

   This opens a Windows dialog specific to the printer you selected. It prompts you to specify printing orientation, paper source and size, resolution, and other settings.

4. Make your selections.

5. Choose OK.

Printing

■ **To print a screen:**

1. Open the screen.

2. Choose File Print.

LightShip Files

There are four kinds of LightShip files, which are identified by their extensions:

.LSF	These are screen files. If you do not type an extension when saving a file, LightShip gives the file this extension.
.BAK	These are backups of screen files. When you save a file, LightShip saves the previous version of the file with a .BAK extension, unless you turn off Create .BAK file in the Preferences dialog box.
.LOG	This is an error log file to use when testing and debugging your application. For more information about this file, see *Chapter 11: Running and Testing an Application*.
.TMP	This is a temporary file created by a *Save File - Temporary Name* action. Use temporary files to

Actions control the operations that take place and how you navigate through the screens. Actions also allow you to build dynamic, data-driven queries depending on which hotspots you click on. LightShip actions include:

- Commands
- Functions
- Mathematical operations
- Logical operations
- Relational operations

You display data in document objects. You can enter data manually, display text files, or display data from any application that uses DDE, including Microsoft Excel, Microsoft PowerPoint®, and Pioneer Q+E™. LightShip supports hotlinks to DDE applications, so data display is automatically updated when the data in the source changes.

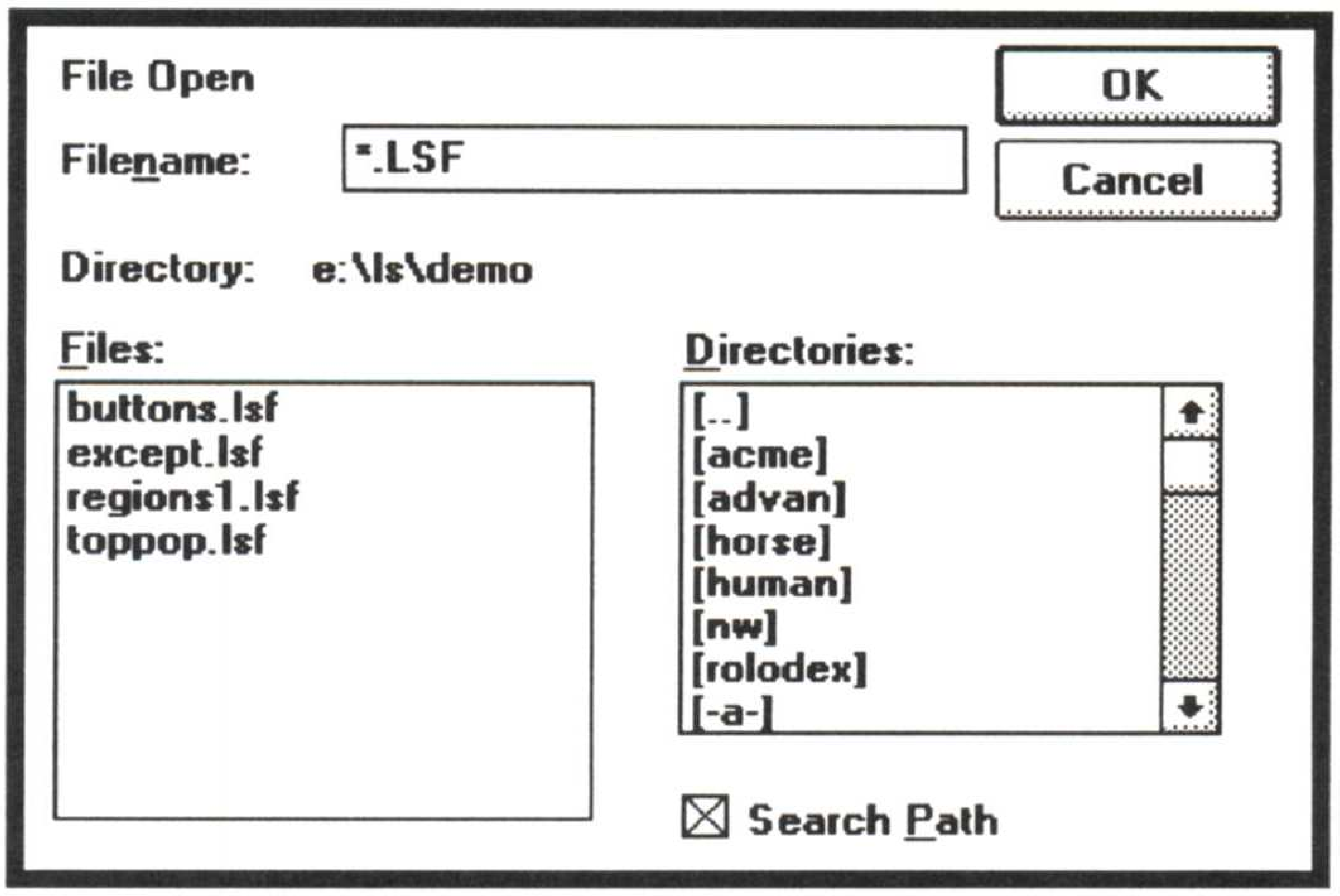
Application Screens

You can open only one screen at a time in each instance of the LightShip program; however, you can run multiple instances of LightShip at a time.

LightShip application screens have a title bar, Control menu, Maximize and Minimize buttons, and optionally, a menu bar and scroll bars.

You can control the following attributes of a screen:

- Color
- Window caption in the title bar
- Position and size of the window
- Menu bar
- Scroll bars



Filename: *.LSF

Directory: e:\ls\demo

Files:
buttons.lsf
except.lsf
regions1.lsf
toppop.lsf

Directories:
[..]
[acme]
[advan]
[horse]
[human]
[nw]
[rolodex]
[-a-]

☒ Search Path

Figure 2-8 Opening a File

2. Type the filename or click on a filename in the list of files.

   - **To list a specific subset of files**:

     Substitute character(s) in the filename with an asterisk (*). For example, to list all the files that start with "ap" and end with ".lsf," type:

     `ap*.lsf`

   - **To list all the files with extensions that start with "l,",type:**

     `*.l*`

3. Turn on the Search Path option if you want LightShip to look for the file in the current working directory first, and then in a search path you have defined.

   If you do not turn on the Search Path option, LightShip searches only the directory specified on the dialog box. For more information, see "Defining a Search Path," later in this chapter.

3. Choose OK.

☞ **Note**

LightShip allows as many colors as your display adapter supports. You can customize 48 of the colors on the palette by choosing Options Palette. For more information, see *Chapter 5: Text, Draw Objects, and Images*.

Creating a Pop-Up Screen

You can use the Invisible option on the Options Screen Color dialog box to create a pop-up screen. For example, create a new screen with a small chart or a draw object that looks like a dialog box. Then give the screen an invisible screen color and save and close the file.

When you call the screen with the invisible screen color, the calling screen appears behind the chart or draw object as a grayed background (see Figure 2-3).

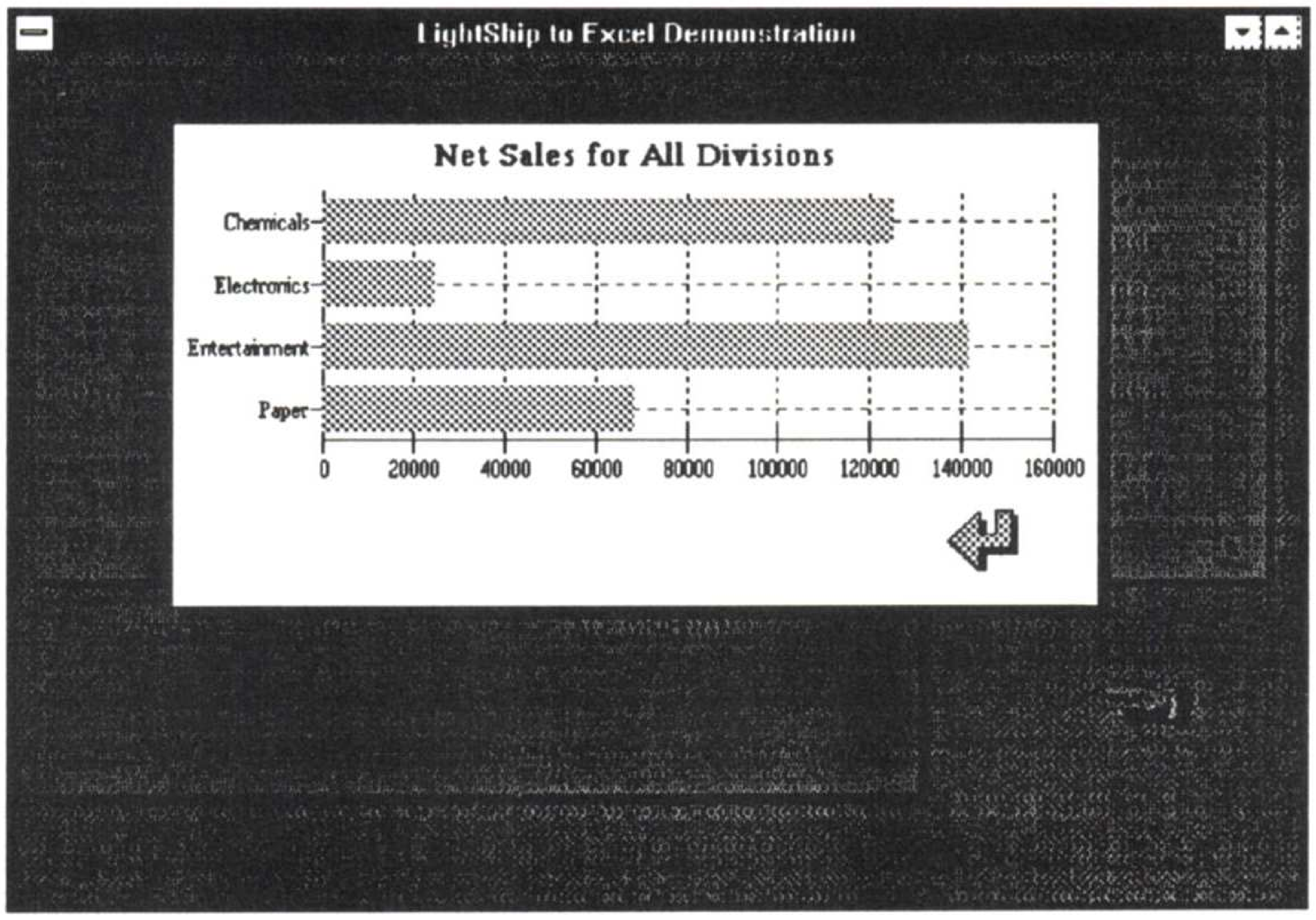


Figure 2-3 Creating a Pop-up Screen

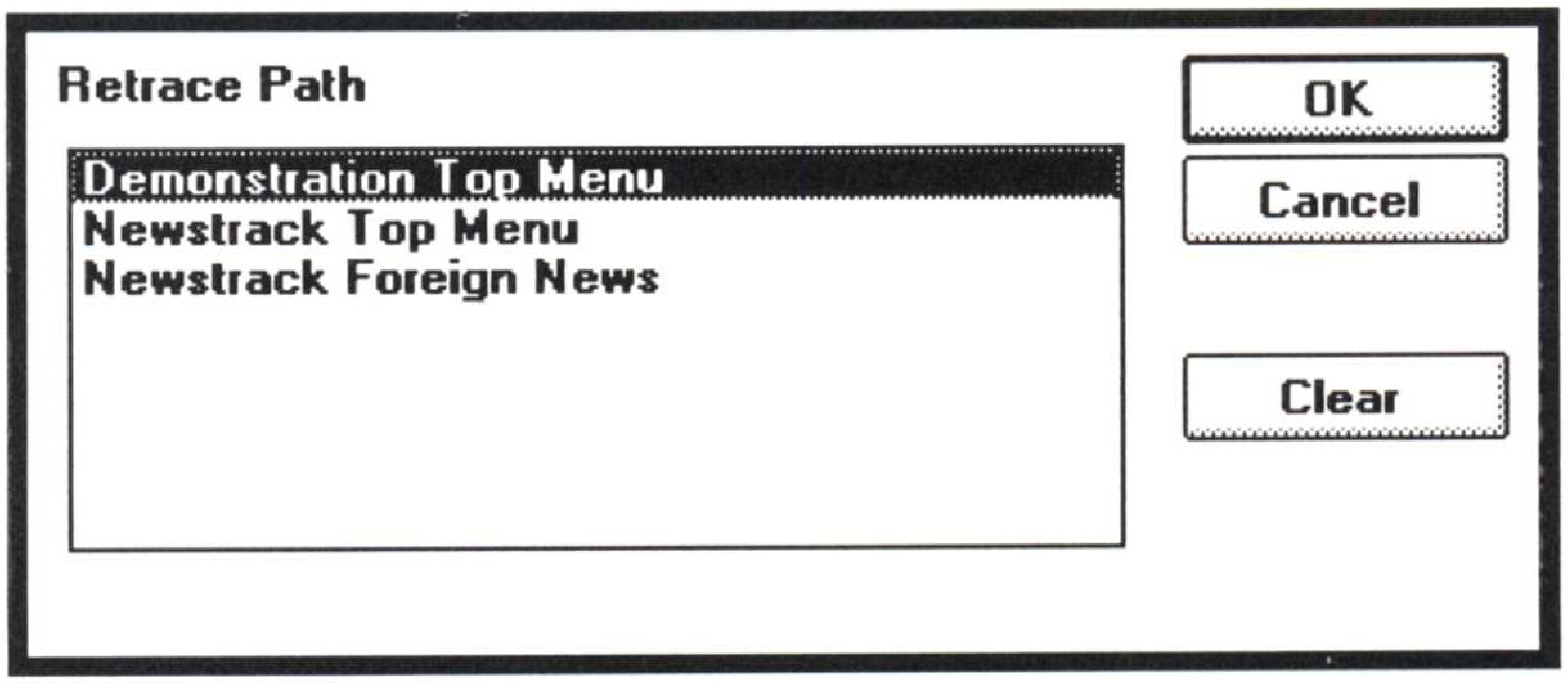
The retrace path usually displays window captions; if a screen has no window caption, it lists the filename.

Displaying the Retrace Path

To display the Retrace Path:

Choose Special Retrace Path or press F10.

A dialog box appears.



Retrace Path

Demonstration Top Menu
Newstrack Top Menu
Newstrack Foreign News

Figure 2-9 Displaying the Retrace Path

Use this dialog box to:

- Erase all entries in the retrace path (except the top entry) by clicking the Clear button.
- Open a file in the retrace path by double-clicking on the filename.
- View the retrace path and click Cancel to close the dialog box.

The Open File Actions

There are five Open File actions; each one opens a file and manipulates the retrace path.

The *Open File - Add to Retrace Path* and the *Open File - Dialog (Add to Retrace Path)* actions open a file and add it to the end where <pathlist> is a list of drives and directories, separated by a semicolon, that will be searched.

The DOS PATH Command

Use the DOS PATH command to define a search path at the DOS command line.

- **The general form of this command is:**

```
PATH <pathlist>
```

where <pathlist> is a list of drives and directories, separated by a semicolon, that will be searched.

* * *

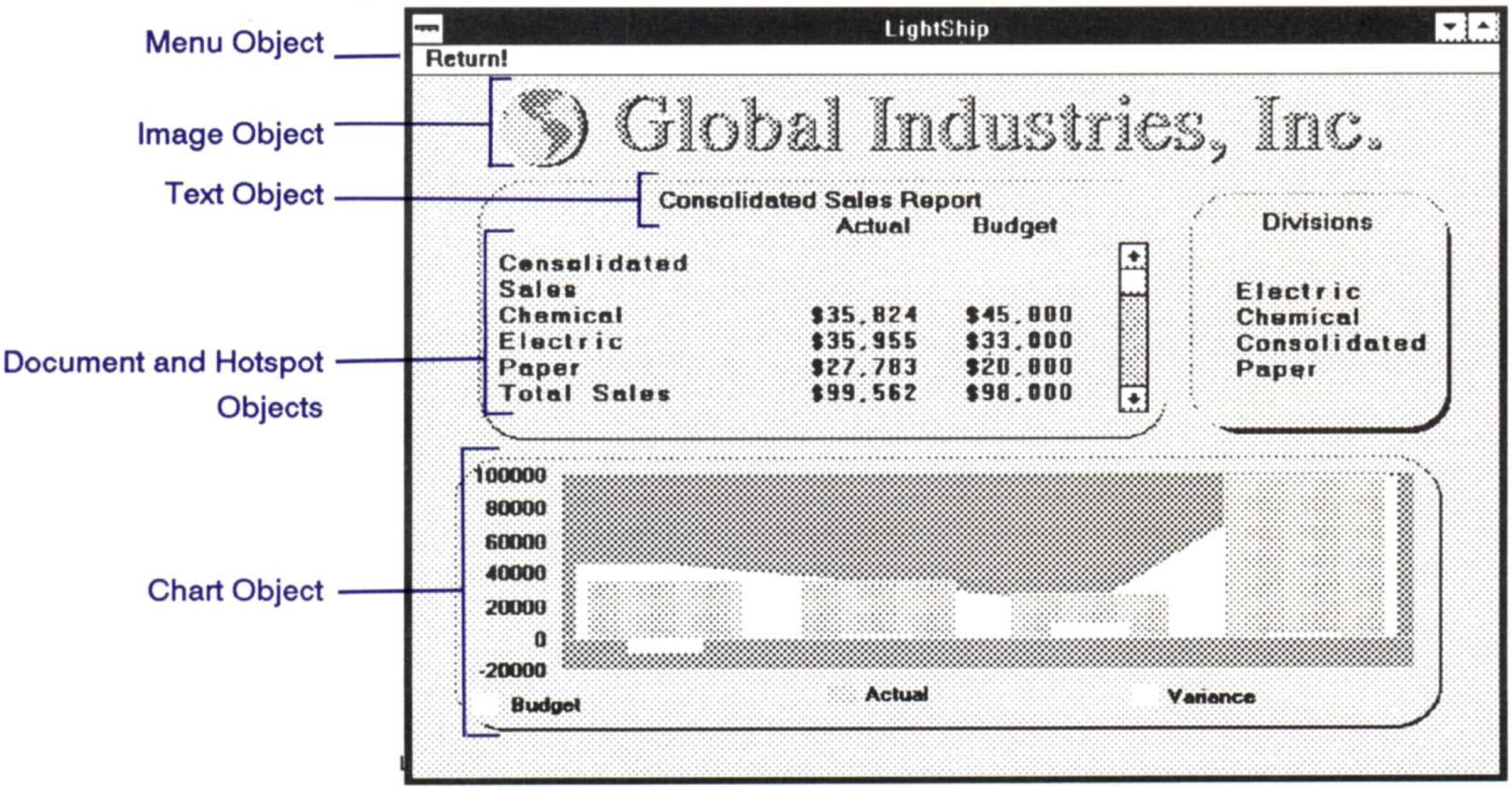
Chapter 3

Objects, Tools, and Modes

This chapter introduces the objects, tools, and modes that you use to create an application. It also describes the operations that are common to all objects. Use the chapters that follow to learn how to work with each type of object individually.

LightShip Objects

You use objects to display data, images, menus, and buttons. Certain objects can also contain variable references and actions that are executed at the Browse level.



Consolidated Sales Report

	Actual	Budget
Consolidated Sales		
Chemical	$35,824	$45,000
Electric	$35,955	$33,000
Paper	$27,783	$20,000
Total Sales	$99,562	$98,000

Divisions

Electric
Chemical
Consolidated
Paper

Selecting Multiple Objects

You can select multiple objects and perform operations on all of them at once. This is different from grouping objects, where multiple objects are treated as one object. The operations you can perform on multiple objects are:

- Move, Cut, Copy, Paste, Duplicate, Clear
- Send to Back and Send Backward
- Bring to Front and Bring Forward

■ **To select objects that are next to each other with the mouse:**

Drag the mouse around the objects you want to select until they are completely enclosed.

Make sure the cursor is not touching any object or you will move it. You will see a dotted selection rectangle as you drag the mouse. You must entirely enclose all the objects you want to select within this rectangle.

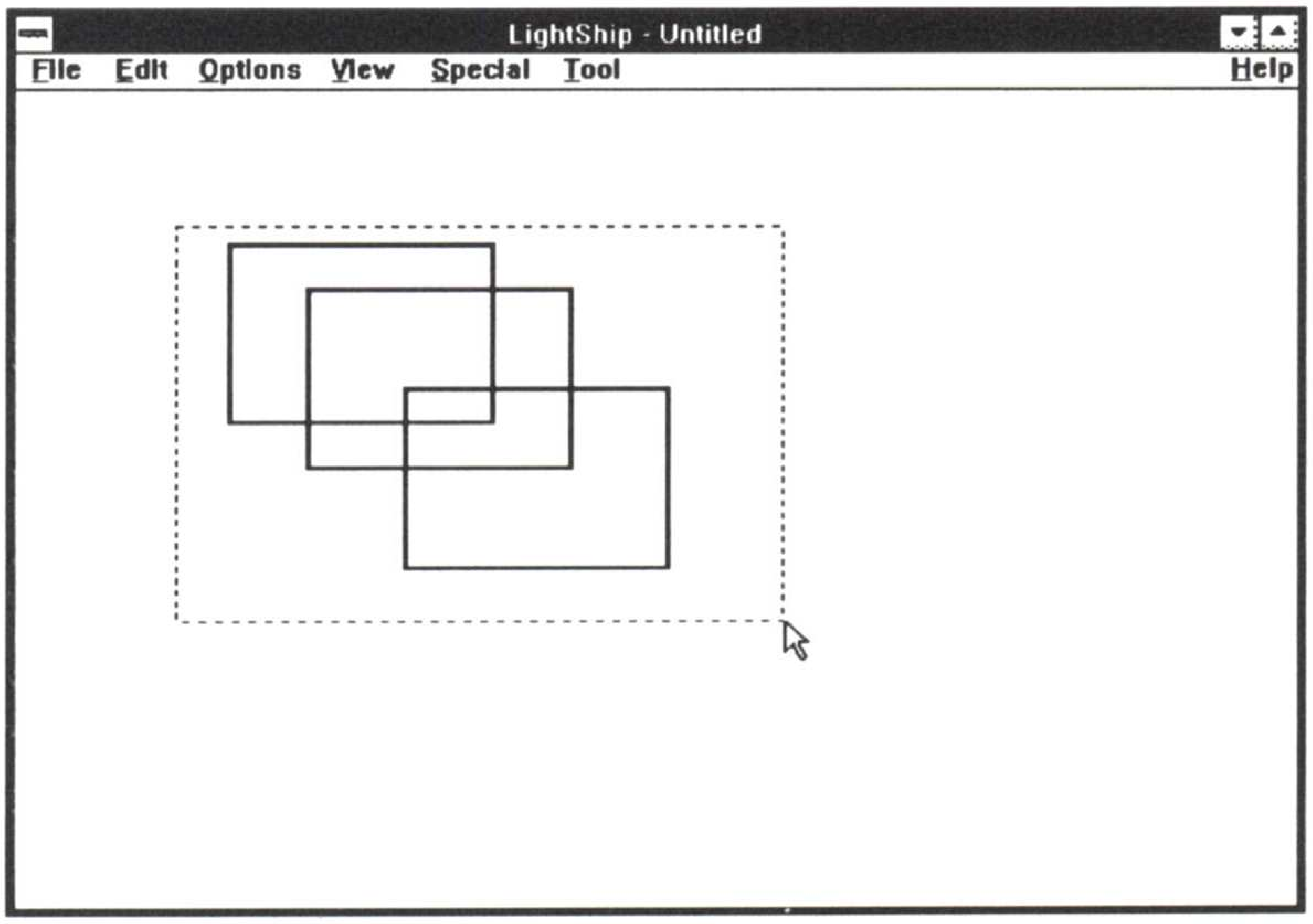


Figure 3-6 Selecting Multiple Objects

■ **To copy the selected object(s) or group:**

1. Choose Edit Copy or press CTRL+INS.

2. Click on the place where you want to paste the object.

   If you don't click the mouse before choosing Paste, the copy appears below and to the right of the original object. You can then drag the new object to the desired location.

3. Choose Edit Paste or press SHIFT+INS.

■ **To duplicate the selected object(s) or group:**

Choose Edit Duplicate or press INS.

The copy appears overlapping the original object, slightly lower and to the right.

4. Drag the copy away from the original.

Pasting Objects

You use the Paste command to place a copy of an object that has been cut or copied to the Clipboard on the screen. You can only paste back the object that was last cut or copied to the Clipboard.

■ **To paste the selected object(s) or group:**

1. Click on the place where you want to paste the object.

   If you don't click the mouse before choosing Paste, the object will appear a little below and to the right of the original. You can then drag the copy to the desired location.

2. Choose Edit Paste or press SHIFT+INS.

   You can continue pasting the same object(s) until you cut or copy something else.

Assigning Attributes to Objects

Once you create an object, you define it further by assigning *attributes* to it. For example, an object's size, color, and data source are attributes. The settings on the object menu determine the object's attributes when it is created.

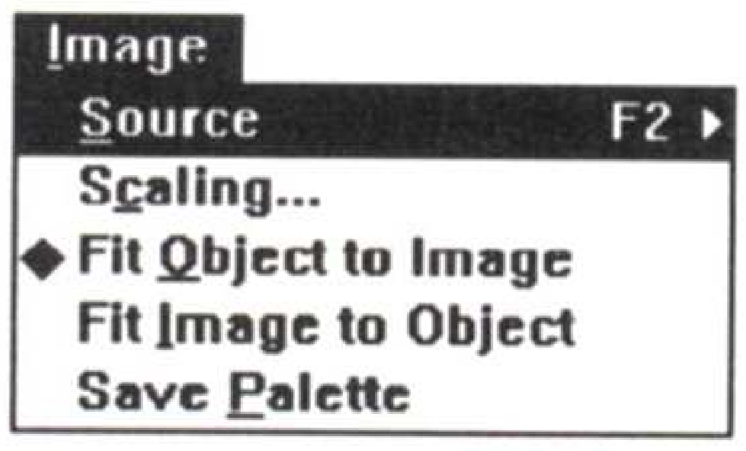
- **To assign an attribute to an object:**

1. Select the object.

   The menu for that object type appears on the menu bar.

2. Choose an item from the object's menu.

Setting Defaults for Objects



LightShip automatically sets defaults for both objects and screens. You can override these and set your own defaults by creating a file called DEFAULT.LSF. For information about how to create this file, see *Chapter 2: Applications, Screens, and Files*.

The default settings on a menu are marked by a black diamond next to the menu item. If you create an object without changing these settings, the object is created with the default attributes.

You can change an object's attributes either before or after you create it. If you change an attribute *before* creating an object, that setting becomes a default for all objects of that type for that screen. If you change an attribute *after* creating an object, the setting only changes for that specific object.

For All Objects of One Type

- **To set defaults for an object type on a specific screen:**

1. Choose the object from the Tool menu.

Displaying the Status Box

You can display information about the screen or a selected object or group using the Status box. If no object or more than one object is selected, the Status box displays the:

- Cursor position
- Current mode
- Number of objects on the screen

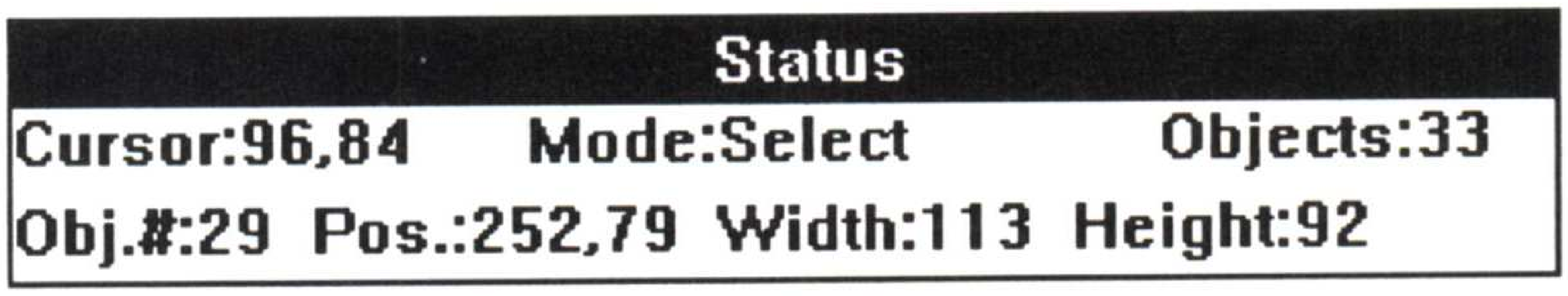
If one object or group is selected, the Status box displays the following additional information:

- Object or group number.
- Object or group position in pixels. The first number is the horizontal coordinate and the second number is the vertical coordinate.
- Object or group width in pixels.
- Object or group height in pixels.

The object information is helpful when you use the POSITION function, which requires an object's position and size. Figure 3-11 shows how the Status box appears when an object is selected.

To display the Status box:

Choose View Status Box.



Status

Cursor:96,84 Mode:Select Objects:33

Obj.#:29 Pos.:252,79 Width:113 Height:92

Figure 3-11 The Status Box

To close the Status box:

Choose View Status Box again or double-click on the title bar.

For information on how to view and list objects, see "Keeping Track of Objects."

Grouping Objects

You can group multiple objects together so that they are treated as one object until you ungroup them. You can perform the following operations on grouped objects:

- Move
- Cut, Copy, Paste, Duplicate, Clear
- Send to Back and Send Backward
- Bring to Front and Bring Forward

You cannot assign attributes to a group or resize it. When you select a group, no object menu appears on the menu bar. You must ungroup the objects and select them individually to specify attributes from an object menu.

You can display information about individual objects in a group by listing them in the Debug window. For more information, see "Keeping Track of Objects."

■ **To group objects:**

1. Select all the objects that you want to group by dragging the mouse around them.
2. Choose Special Group.

■ **To ungroup grouped objects:**

1. Select the group.
2. Choose Special Ungroup.

Select Mode

Use Select mode to select an object before you do something to it.

■ **To enter Select mode:**

1. Choose Tool Select or click on the Pointer icon in the Toolbox. The cursor changes to the pointer.
2. Click on an object to select it.

Point Mode

Use Point mode to select data from document objects. For more information, see "Point Mode."

Point Mode

Use Point mode to select data from document objects to:

- Format a document
- Select data series' and other information for charts
- Assign parameter values using the Point option
- Assign function arguments using the Point option
- Point to a different source document when coloring variances

Getting to Point Mode

The way you get to Point mode depends on the object you are defining. For example, if it is a format object, you choose Format Destination; if it is a chart object, you choose Chart Data and the number of the data series for which you want to select data.

The Point Mode Screen

The Point mode screen appears similar to the one shown in Figure 3-12. You can point to items on the screen to select them. The title bar and menu bar change when you enter Point mode. The title bar tells you what you are selecting. For

- Choose Send to Back to move the selected item behind all other objects.
- Choose Bring to Front to move the selected item in front of all other objects.

Resizing an Object

When you click on an object's border, a perpendicular two-headed arrow appears, and you can drag the object's border up and down. When you click on an object's corner, a diagonal two-headed arrow appears, as shown in Figure 3-8. This cursor allows you to move the object's border up and down, as well as left and right.

To resize an object:

1. Point to the object's border or corner.
2. When the cursor changes to a two-headed arrow, drag the object until it is the size you want.

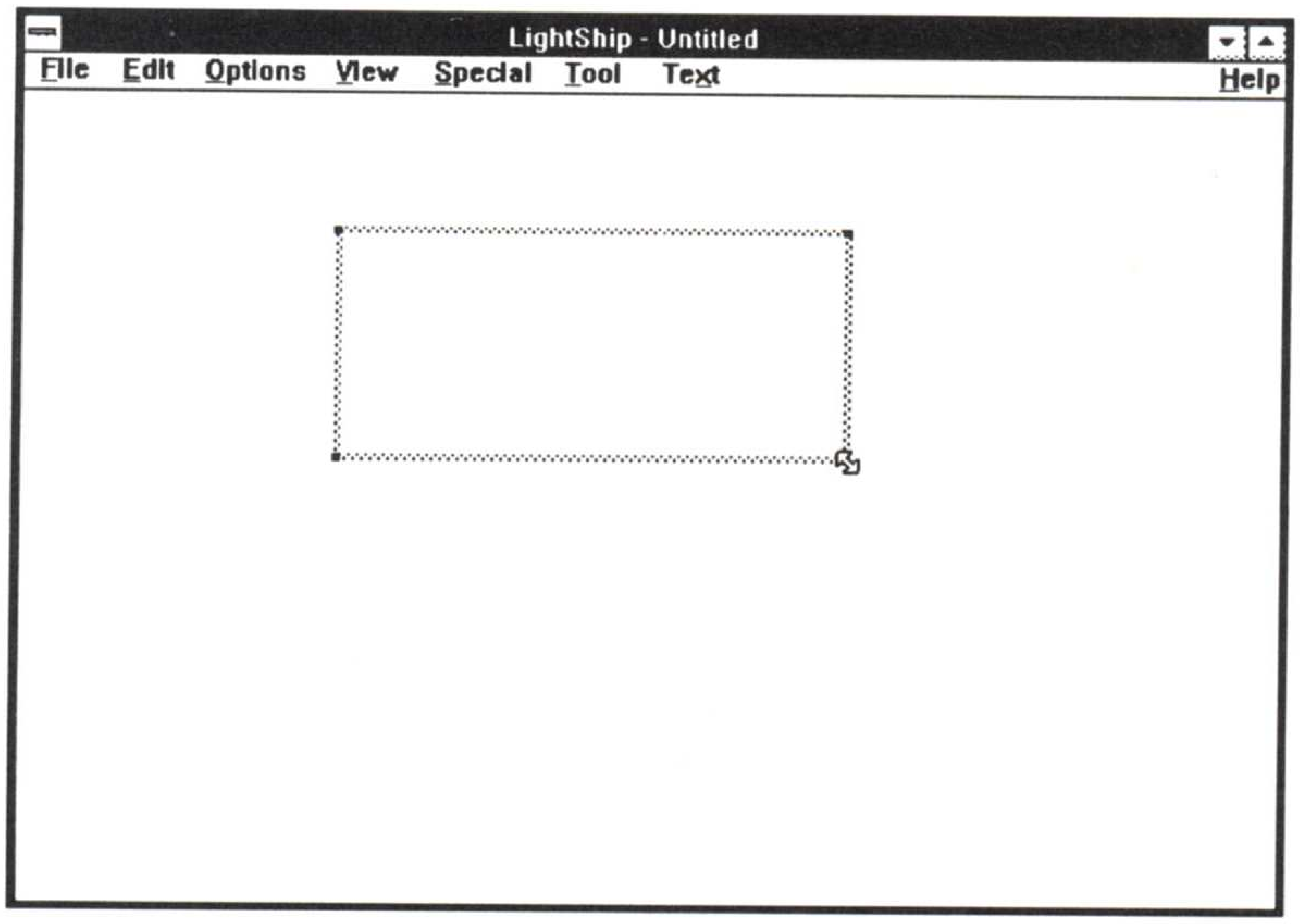


Figure 3-8 Resizing an Object

How to Select Data

- **To select data in Point mode:**

  Drag the cursor over the items you want to select.

- **If you make a mistake:**

  - Choose Undo! to deselect the last column you selected. You can choose Undo! multiple times and it will deselect highlighted items in the order that you selected them (from the last selected to the first selected).
  - Choose Redo! to reselect the items that you deselected with Undo! in the order that you selected them (from first to last).
  - Choose Clear All! to deselect all the highlighted columns.

- **To exit from the Point mode screen:**

  Choose OK! to proceed, or Cancel! to exit and cancel what you selected.

* * *

5. Choose OK.

Resetting the Default

- **To reset the grid back to the default of half an inch:**

  Choose the Default button.

Editing Objects

Use the Edit menu to cut, copy, paste, clear, and duplicate objects.

Erasing Objects

You can erase objects with the Cut or Clear commands. The Cut command erases an object, but saves it on the Clipboard so you can use the Paste command to bring the object back. Note that when you cut something, it overwrites whatever is currently on the Clipboard. The Clear command permanently erases an object, and it is not saved on the Clipboard.

- **To cut the selected object(s) or group:**

  Choose Edit Cut or press DEL.

- **To clear the selected object(s) or group:**

  Choose Edit Clear or press SHIFT+DEL.

Copying Objects

You can copy object(s) with the Copy and Duplicate commands. The Copy command makes a copy of an object and saves it on the Clipboard. You can use the Paste command to bring the object back. Note that when you copy an object, it overwrites whatever is currently on the Clipboard. The Duplicate command copies and pastes the selected object(s) in one step.

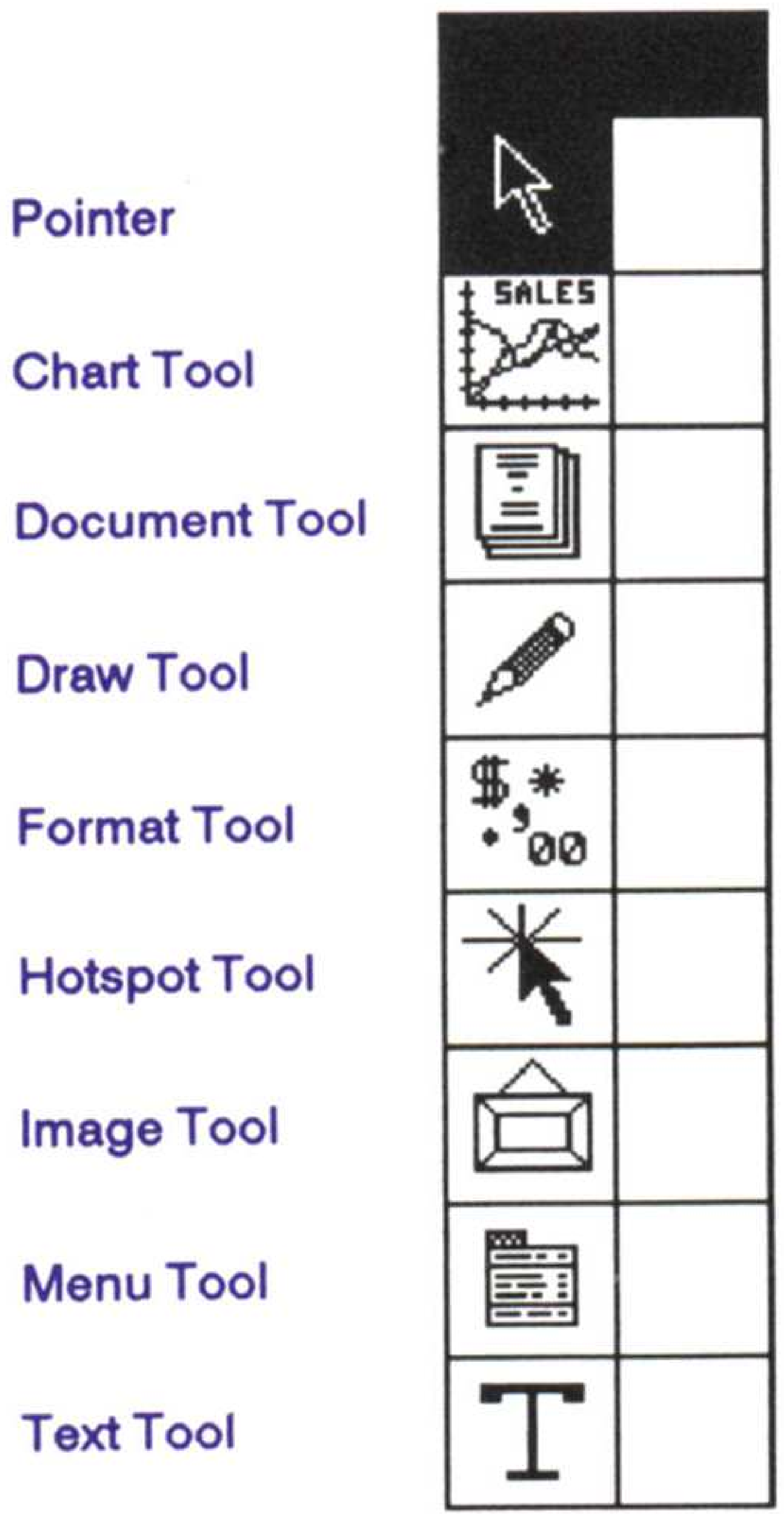
The Toolbox

The Toolbox displays the tools as icons. You use the Toolbox to create multiple objects quickly. When you select a tool icon, you create an object of that type every time you click or drag the mouse on the screen.

The Toolbox first appears on the right side of the screen. To move it, point to the top of the Toolbox and drag it to the desired location.

To open the Toolbox:

Choose Tool Toolbox.



To close the Toolbox:

Double-click on the top of the Toolbox or choose Tool Toolbox again.

Keeping Track of Objects

Listing Objects

You can list all objects and their attributes in the Debug window.

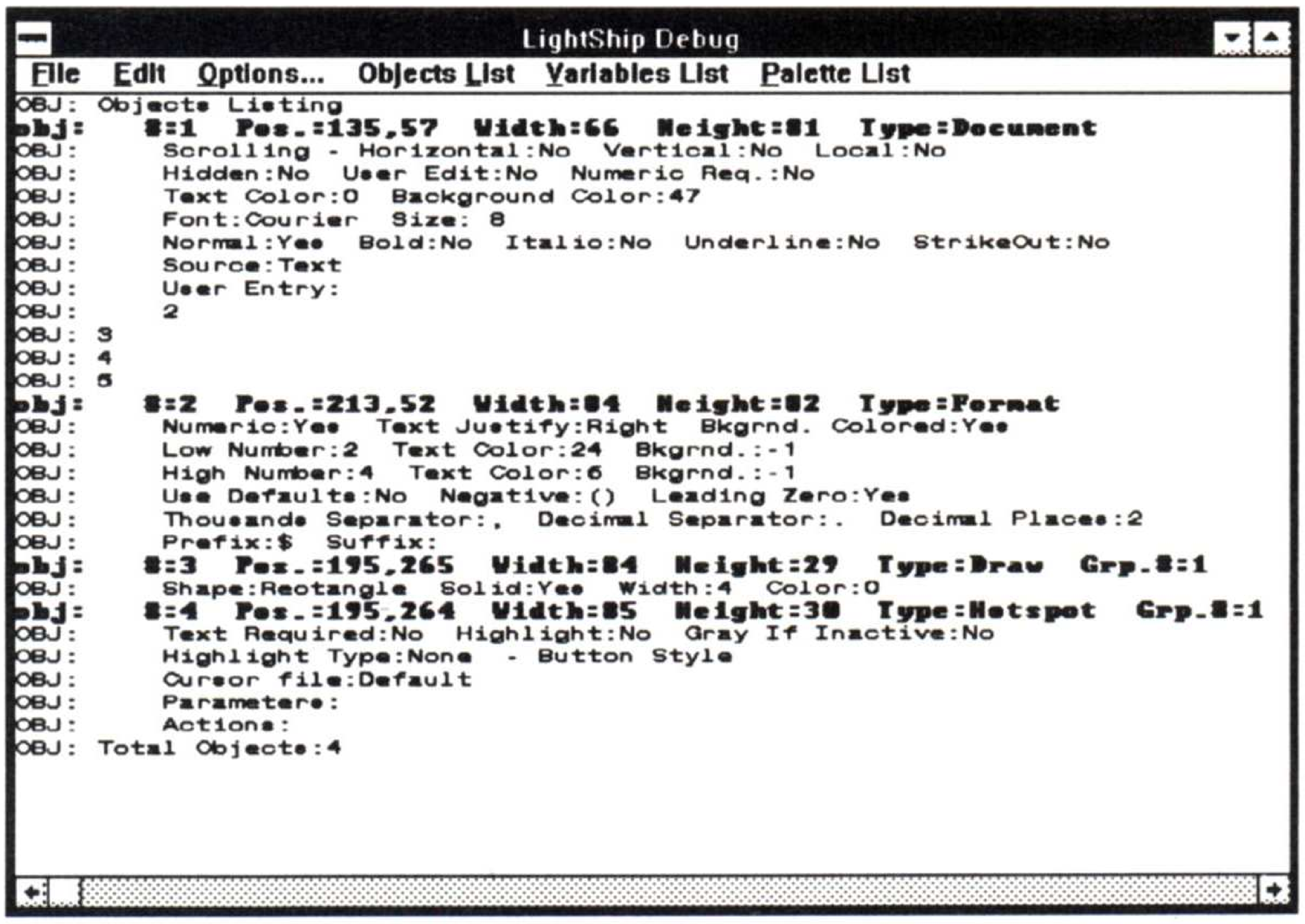
To list information about objects on the current screen:

1. Choose Special Debug.

   The Debug window opens (see Figure 3-10). For complete information about the Debug window, see *Chapter 11: Running and Testing an Application*.

2. Choose Objects List.

   LightShip lists all the objects on the current screen from back to front, with a number, type, screen position, and all other attributes associated with each object.



```
OBJ: Objects Listing
obj:    #:1  Pos.:135,57  Width:66  Height:81  Type:Document
OBJ:      Scrolling - Horizontal:No  Vertical:No  Local:No
OBJ:      Hidden:No  User Edit:No  Numeric Req.:No
OBJ:      Text Color:0  Background Color:47
OBJ:      Font:Courier  Size: 8
OBJ:      Normal:Yes  Bold:No  Italic:No  Underline:No  StrikeOut:No
OBJ:      Source:Text
OBJ:      User Entry:
OBJ:      2
OBJ: 3
OBJ: 4
OBJ: 5
obj:    #:2  Pos.:213,52  Width:84  Height:82  Type:Format
OBJ:      Numeric:Yes  Text Justify:Right  Bkgrnd. Colored:Yes
OBJ:      Low Number:2  Text Color:24  Bkgrnd.:-1
OBJ:      High Number:4  Text Color:6  Bkgrnd.:-1
OBJ:      Use Defaults:No  Negative:()  Leading Zero:Yes
OBJ:      Thousands Separator:,  Decimal Separator:.  Decimal Places:2
OBJ:      Prefix:$  Suffix:
obj:    #:3  Pos.:195,265  Width:84  Height:29  Type:Draw  Grp.#:1
OBJ:      Shape:Rectangle  Solid:Yes  Width:4  Color:0
obj:    #:4  Pos.:195,264  Width:85  Height:30  Type:Hotspot  Grp.#:1
OBJ:      Text Required:No  Highlight:No  Gray If Inactive:No
OBJ:      Highlight Type:None  - Button Style
OBJ:      Cursor file:Default
OBJ:      Parameters:
OBJ:      Actions:
OBJ: Total Objects:4
```

Figure 3-10 Listing Objects

For more information about how order is important, see "Ordering Objects."

Creating an Object from the Tool Menu

To create an object from the Tool menu:

1. Choose the object from the Tool menu.

   The cursor changes to a crossbar, indicating that you are in Create mode.

☞ To align an object to the grid without turning the grid on, press CTRL before clicking the mouse.

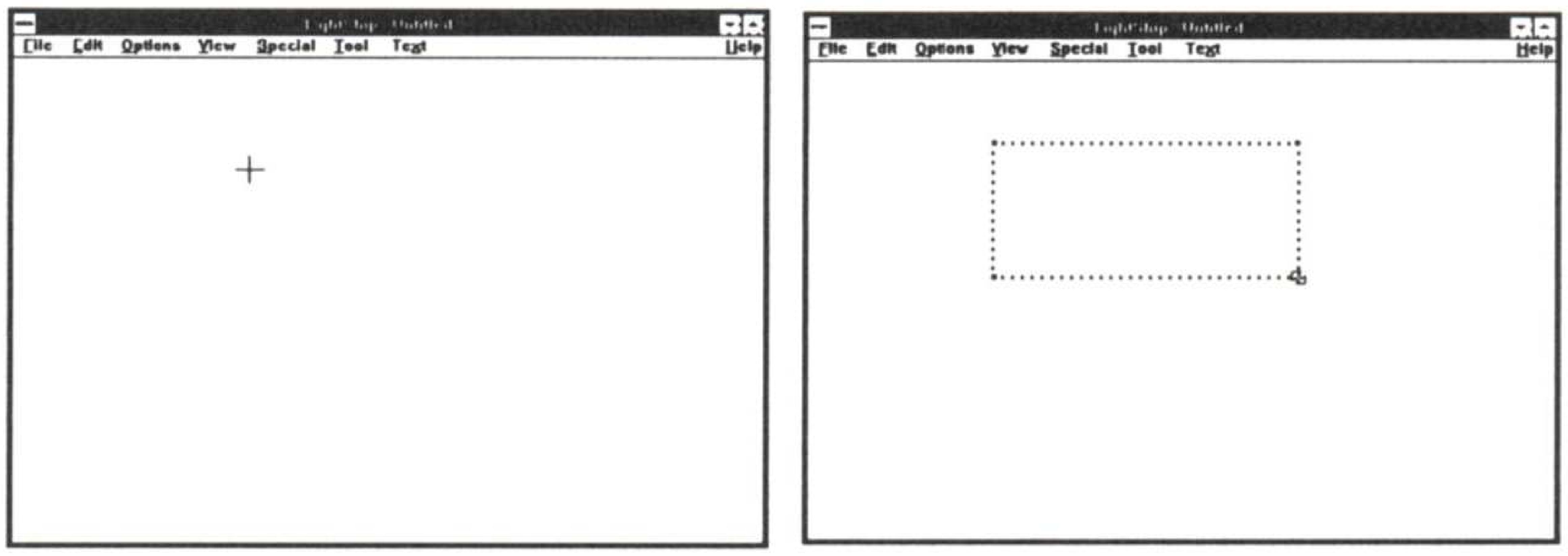

File Edit Options View Special Tool Text Help
File Edit Options View Special Tool Text Help

Figure 3-2 Creating an Object

2. Drag the mouse across the screen from left to right to create the object in the size you want.

   Or

   Click on the screen to create the object in the same size as the last selected object of that type. (Lines and polygons are an exception.)

3. After you create the object, the cursor changes back to the pointer, indicating that you can select other objects.

Creating an Object from the Toolbox

When you use the Toolbox, you select a tool and each time you click the mouse, you create another object of that type. Display the Toolbox when you are creating a lot of objects and you do not want to have to select the tool each time.

LightShip Levels and Modes

LightShip Levels

LightShip has three levels:

Author	The Author level is for building applications.
Browse	The Browse level is for testing and running applications.
Capture	The Capture level is just like the Browse level, except that it does not allow access to Windows or the Author level. The Control menu does not appear and the File Exit command and the Terminate Program action return to DOS.

Unless you start LightShip using the /b (for Browse) or /c (for Capture) arguments, LightShip opens at the Author level.

■ **To move between the Author and Browse levels:**

Choose Special Author or press F4.

Author Level Modes

At the Author level, there are three modes:

- Create
- Select
- Point

Create Mode

+

Use Create mode to create objects.

■ **To enter Create mode:**

Choose a tool from the Tool menu or the Toolbox. The cursor becomes a crossbar.

Drag or click the mouse to create the object.

4. When you are finished creating one type of object, select another tool or select the pointer at the top of the Toolbox to get out of Create mode.

5. Double-click on the top of the Toolbox to put it away.

Showing Hidden Objects

Hotspot, menu, and format objects are normally hidden objects, that is, they are not displayed. You can also hide document objects if you choose. However, sometimes it is useful to display hidden objects. The commands described below display hidden objects at the Author level, but do not show them at the Browse level.

- **To outline all objects with a dotted line:**

  Choose View Outline All Objects.

- **To outline only hotspots:**

  Choose View Outline Hotspots.

- **To show format, menu, and hidden document objects:**

  Choose View Show Hidden Objects.

Selecting Objects

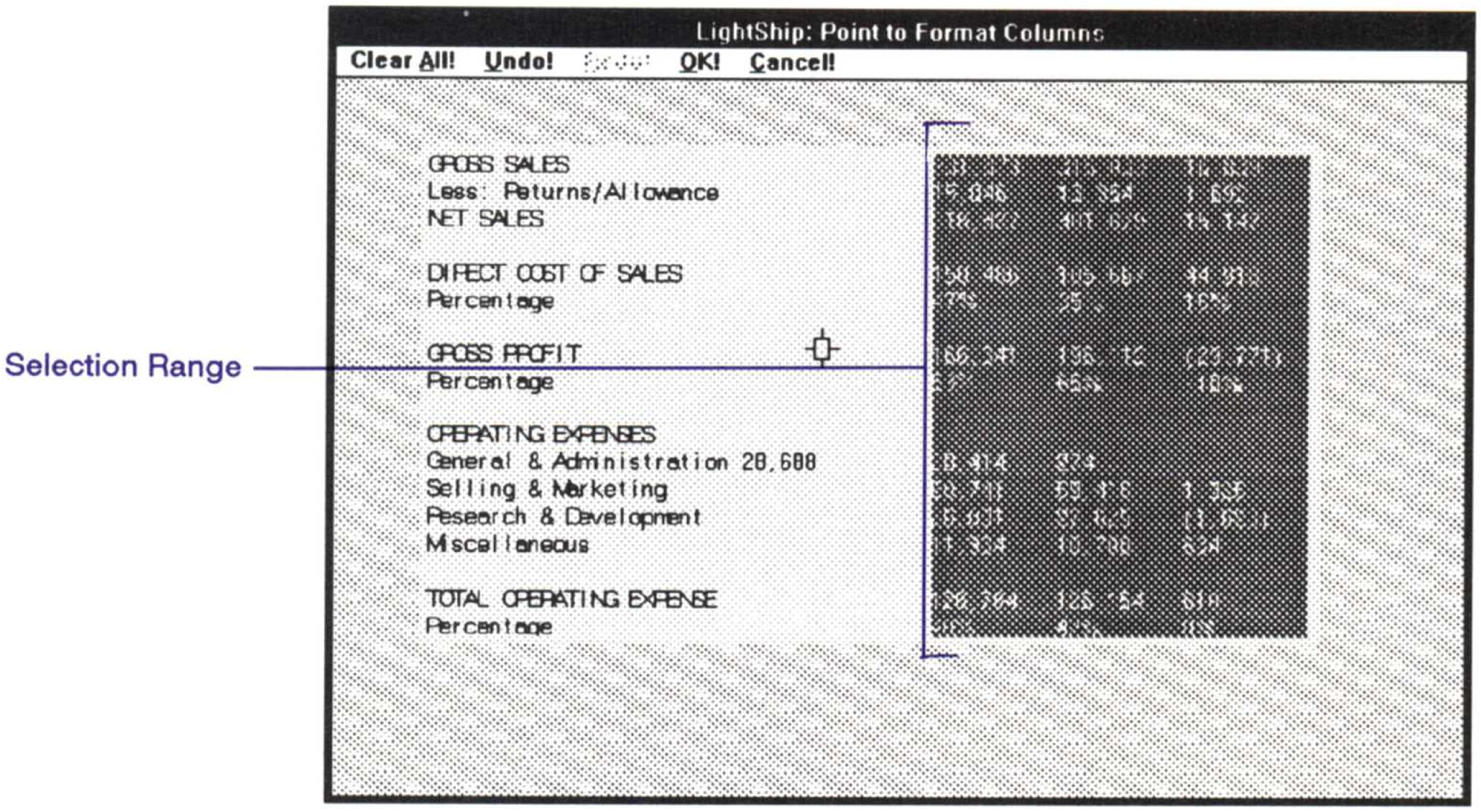
You must select an object before you can do anything with it. When you select an object, a rectangle appears around it with resizing boxes in the corners.

- **To select an object with the mouse:**

1. If the cursor is not the pointer, choose Tool Select.

example, in Figure 3-12, the title "Point to Format Columns" tells you that are selecting data to format.

The only objects that appear on the screen are document objects. All document objects display in Point mode, even hidden documents.



```
GROSS SALES
Less: Returns/Allowance
NET SALES

DIRECT COST OF SALES
Percentage

GROSS PROFIT
Percentage

OPERATING EXPENSES
General & Administration 20,600
Selling & Marketing
Research & Development
Miscellaneous

TOTAL OPERATING EXPENSE
Percentage
```

Figure 3-12 Selecting Data in Point Mode

Selecting Data in Point Mode

When you select data in Point mode, it is highlighted. The width of the area that highlights, called the selection range, is controlled by the Column Delimiter and Column Width settings on the Document menu. If you specify a column delimiter, the width of the selection range is the column widths you enter on the Column Widths dialog box. If you specify no column delimiter (None), LightShip interprets each row as one wide column and data highlights one character at a time.

To deselect an object with the keyboard:

Press ESC.

Selecting an Object in the Debug Window

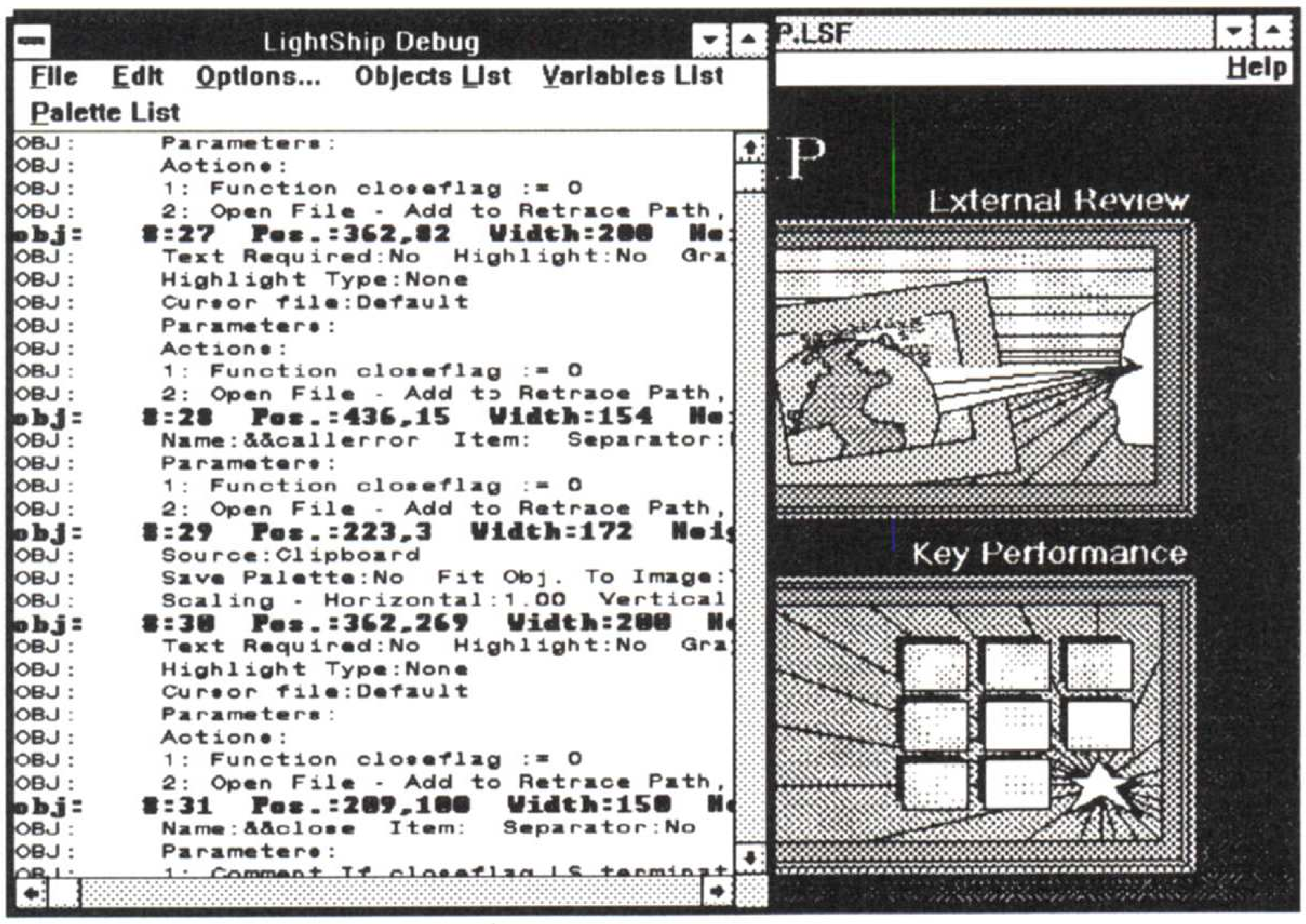
To select an object or group in the Debug window:

1. Choose Special Debug.

   The Debug window opens.

2. Choose Objects List.

   A list of the objects on the screen appears in the Debug window.

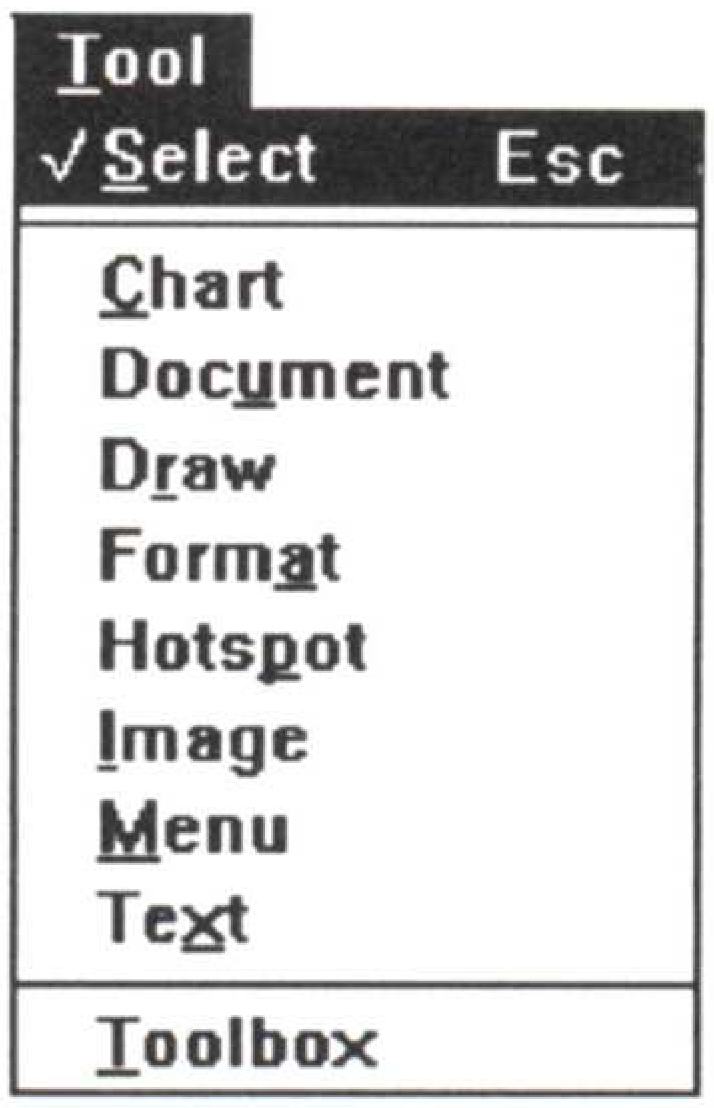


```
OBJ:      Parameters:
OBJ:      Actions:
OBJ:      1: Function closeflag := 0
OBJ:      2: Open File - Add to Retrace Path,
obj=    #:27  Pos.:362,82  Width:200  He
OBJ:      Text Required:No  Highlight:No  Gra
OBJ:      Highlight Type:None
OBJ:      Cursor file:Default
OBJ:      Parameters:
OBJ:      Actions:
OBJ:      1: Function closeflag := 0
OBJ:      2: Open File - Add to Retrace Path,
obj=    #:28  Pos.:436,15  Width:154  He
OBJ:      Name:&&callerror  Item:  Separator:
OBJ:      Parameters:
OBJ:      1: Function closeflag := 0
OBJ:      2: Open File - Add to Retrace Path,
obj=    #:29  Pos.:223,3  Width:172  Hei
OBJ:      Source:Clipboard
OBJ:      Save Palette:No  Fit Obj. To Image:
OBJ:      Scaling - Horizontal:1.00  Vertical
obj=    #:30  Pos.:362,269  Width:200  H
OBJ:      Text Required:No  Highlight:No  Gra
OBJ:      Highlight Type:None
OBJ:      Cursor file:Default
OBJ:      Parameters:
OBJ:      Actions:
OBJ:      1: Function closeflag := 0
OBJ:      2: Open File - Add to Retrace Path,
obj=    #:31  Pos.:209,100  Width:150  H
OBJ:      Name:&&close  Item:  Separator:No
OBJ:      Parameters:
OBJ:      1: Comment If closeflag IS terminat
```

Figure 3-5 Selecting an Object in the Debug Window

3. Double-click on the bold line in the Debug window that identifies the object.

   This selects the object or group on the LightShip screen.



LightShip Tools

You use the tools on the Tool menu to create objects. The following tools are available:

Chart	Draws a graph of numeric data.
Document	Displays text, usually from an external data source such as a DDE Request.
Draw	Draws rectangles, circles, lines, and polygons.
Format	Formats data and colors variances in document objects.
Hotspot	Creates an area of the screen that performs an action when you click on it.
Image	Displays images from the Clipboard, PCX files, BMP files, or DDE Requests for bitmap data.
Menu	Creates menu-bar menus and menu items that perform actions. Also creates special menu objects that perform actions but are not displayed.
Text	Displays text, for example, headers, titles, labels, button names.

- **To select additional object(s):**

  Hold down the SHIFT key and click the object you want to select or click and drag to select multiple objects.

- **To deselect only one of the selected objects:**

  Hold down the SHIFT key and click the object you want to deselect.

- **To deselect all the objects:**

  Click anywhere else on the screen background or press ESC.

Selecting Overlapping Objects

Multiple objects and groups might overlap or completely cover each other. To select overlapping objects, use the CTRL key with the UP ARROW or DOWN ARROW keys. This only selects objects that intersect the point on which you clicked the mouse.

- **To select the next object back:**

  Press CTRL+UP ARROW.

- **To select the next object forward:**

  Press CTRL+DOWN ARROW.

If you don't select the object that you want, try clicking in another spot. You can usually tell which object is selected by looking at the menu to the right of the Tool menu. If two objects of the same type are overlapping, you need some other way of telling which is selected, for example, by looking at the action or the source of the object.

Creating an Object

You create an object by choosing it from the Tool menu or the Toolbox and then clicking or dragging the mouse on the screen. When you use the Tool menu, you must select a tool each time you create a new object. When you use the Toolbox, you create a new object every time you click the mouse. The Toolbox stays displayed on the screen until you put it away. Use it when you are creating a lot of objects and you do not want to select the tool from the menu each time.

When you create or select an object, a menu for that object type appears to the right of the Tool menu. The settings on this menu determine the attributes that the object has when it is created. Use this menu to define the object in more detail. For example, in Figure 3-2, the Text menu allows you to enter text, and choose colors and fonts for the text.

Some objects might be hidden so that they do not display unless they are selected. If you cannot see an object when it is not selected, choose View Outline All Objects or View Show Hidden Objects. For more information, see the next section "Showing Hidden Objects."

You can have up to 1,000 objects on each screen.

Creating Objects in Back

Objects are created in front of each other by default. In other words, the first object you create is the furthest back and has the lowest number in the Debug window object list. You can reverse this so that new objects are created behind existing objects rather than of in front of them. This can be useful when the order of objects is important, such as hotspots and menu objects.

■ **To create new objects behind existing objects**:

Choose Special Create in Back.

2. Change the settings on the object's menu.

3. Create the object by dragging or clicking the mouse.

For One Object

- **To set attributes for a specific object only:**

1. Choose the object from the Tool menu.

2. Create the object by dragging or clicking the mouse.

3. Choose the object's menu and assign attributes.

Ordering Objects

LightShip treats objects as if they have a front-to-back order. The order and position of objects affects the appearance and the behavior of an application. For example, if two or more hotspots or menu objects are overlapping, the action(s) of the one in front are executed first, then the actions of the next one back, and so forth.

The front-to-back order of menu objects also affects the order in which menu names and items appear. The menu name that is furthest back appears first on the menu bar. The menu in front of that one appears next on the menu bar and so forth. Menu items behave the same way; the menu item furthest back appears first on the menu and the menu item in front of that one appears second.

Objects are initially ordered in the order in which you create them. The first object you create is considered "furthest back" and each subsequent object you create is "in front" of the one before. You can change this so that each new object you create is furthest back by choosing Special Create In Back. To move an object forward or back, use the Special Send commands. For more information, see "Moving and Resizing Objects."

■ To create an object from the Toolbox:

1. Choose Tool Toolbox.

   The Toolbox appears on the screen.

2. Select the tool you want.

   If you select the Draw tool, the draw tool icons appear on the right side of the Toolbox. Figure 3-3 shows the Toolbox with the draw tool icons displayed.

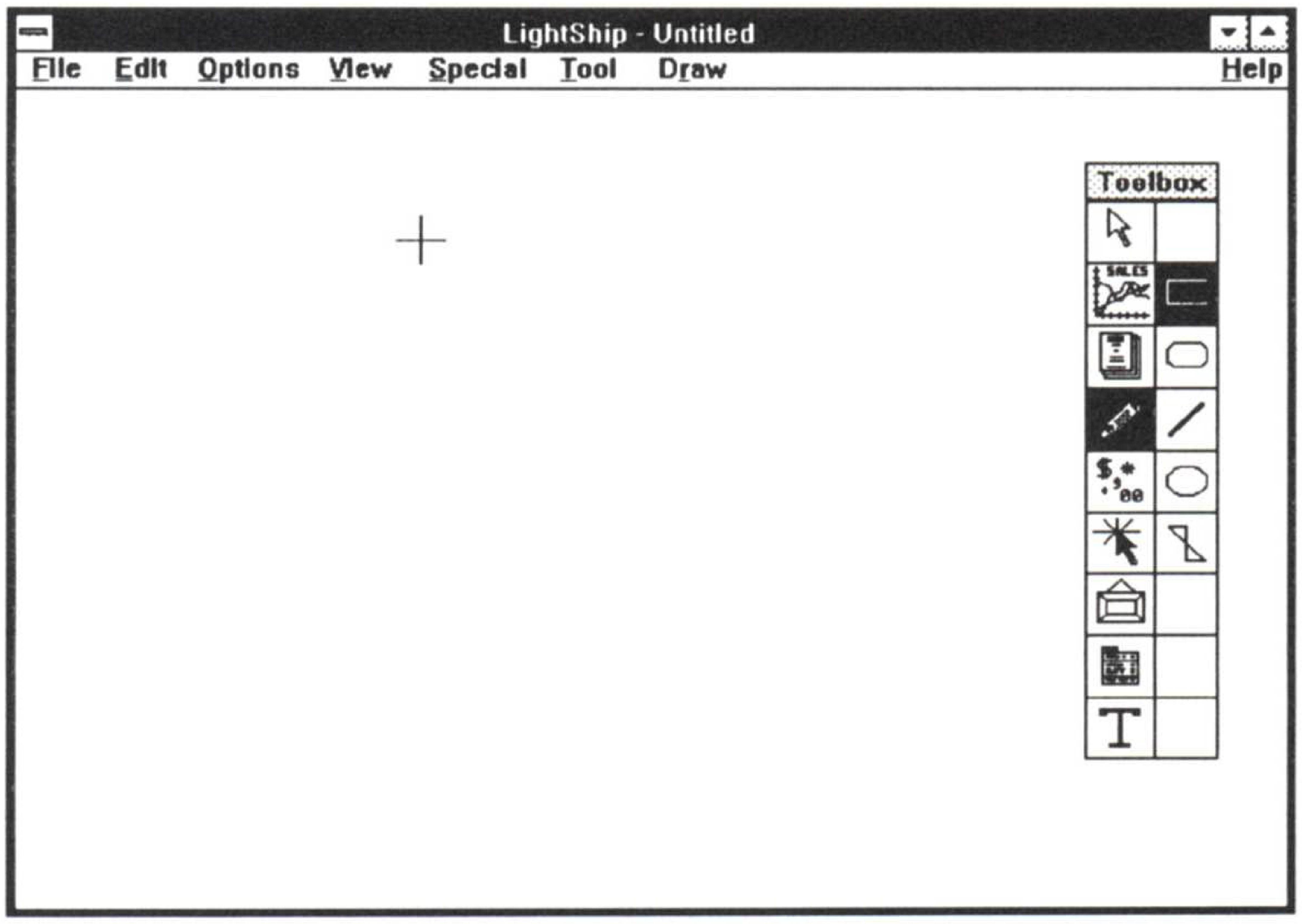


Figure 3-3 Using the Toolbox

3. Drag the mouse across the screen from left to right to create the object in the size you want.

   Or

   Click on the screen to create the object in the same size as the last selected object of that type.

☞ To prevent the screen repainting when moving and resizing, turn off View Preferences Redraw During Move/Resize.

Moving and Resizing Objects

You can move the selected object(s) or group(s) by dragging them with the mouse. The cursor changes to a four-headed arrow.

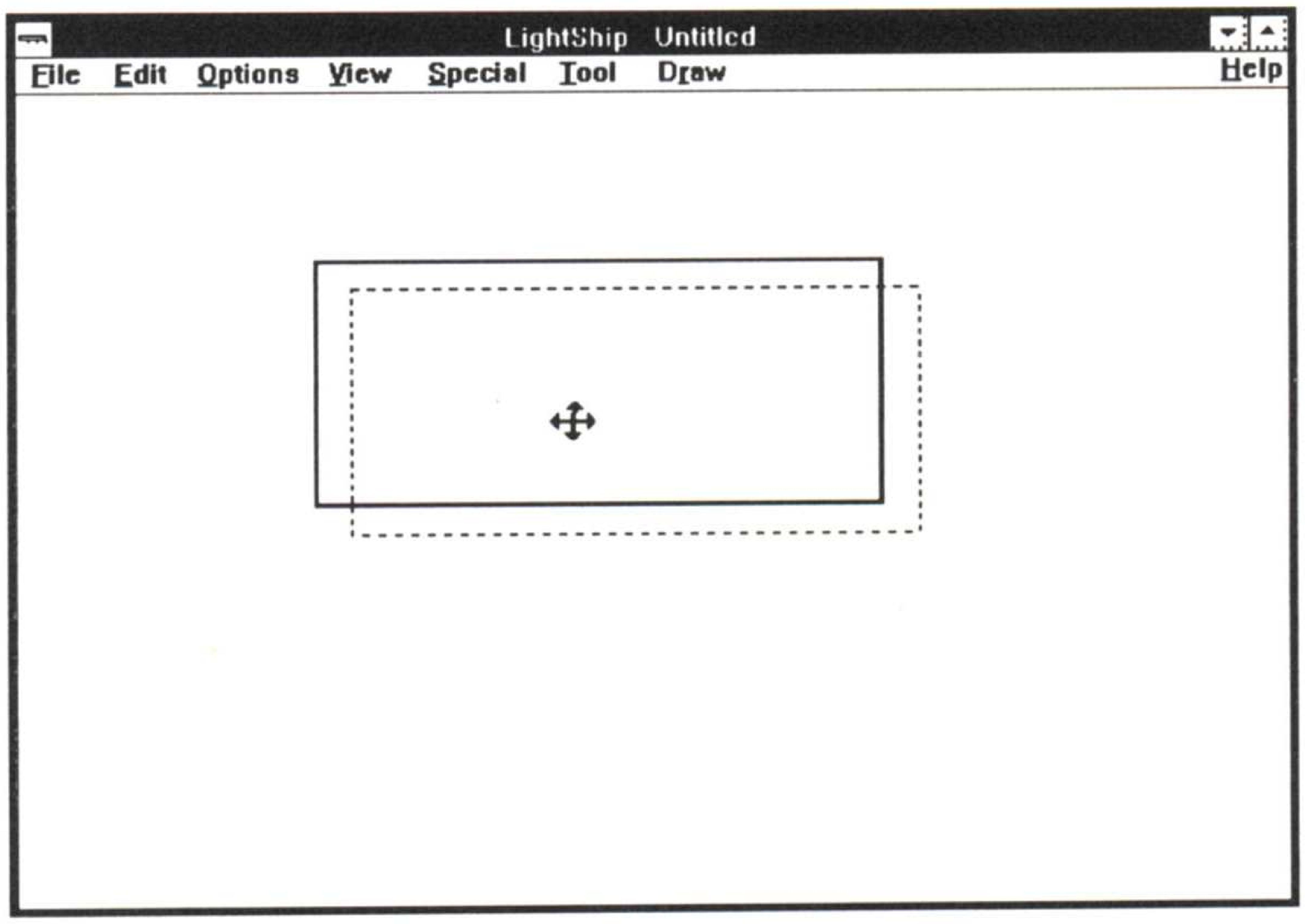


Figure 3-7 Moving an Object

Moving an Object or Group Forward or Backward

To move the selected object or group forward or backward:

1. Select the object or group by pressing CTRL+UP ARROW or CTRL+DOWN ARROW.
2. Choose one of the following options on the Special menu:
   - Choose Send Backward or press F7 to move the selected item backward by one object.
   - Choose Bring Forward or press SHIFT + F7 to move the selected item forward by one object.

The cursor changes to the pointer, indicating that you are in Select mode.

2. Click on the object.

   If there are overlapping objects, the front-most object is selected. A border displays around it as shown in Figure 3-4.

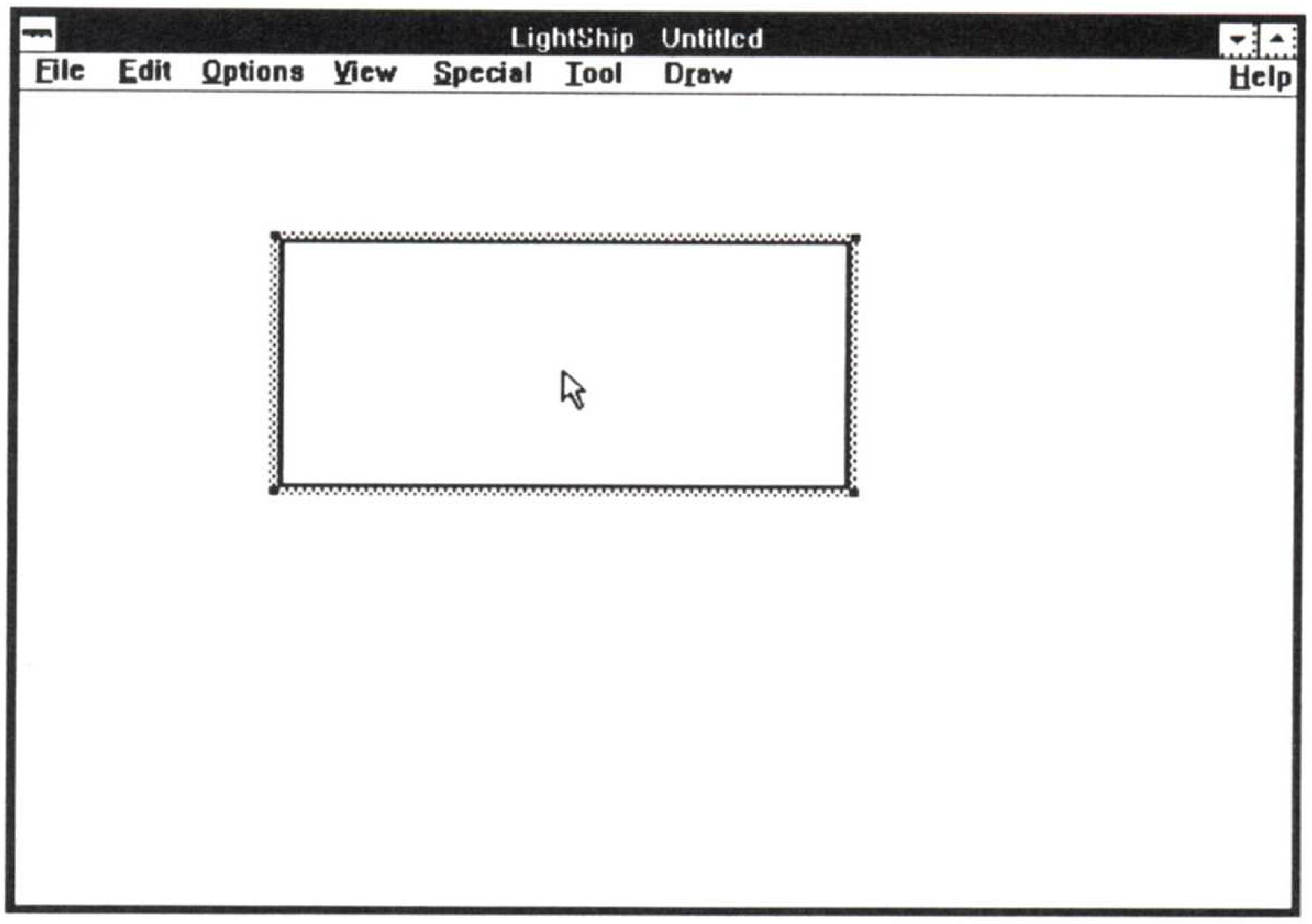


Figure 3-4 Selecting an Object

- **To deselect an object with the mouse:**

  Click elsewhere on the screen background.

- **To select an object with the keyboard:**

  Press CTRL+RIGHT to select objects from back to front.

  Press CTRL+LEFT to select objects from front to back.

Aligning Objects

You can turn on Grid Snap, display grid lines, or use the CTRL key to help you align objects on the screen. The grid only appears at the Author level.

There are two ways to use Grid Snap. If no object is selected when you turn Grid Snap on, objects snap to align with the nearest *grid line* as they are created. If you select an object before turning Grid Snap on, you can make other objects snap to align with that *object*.

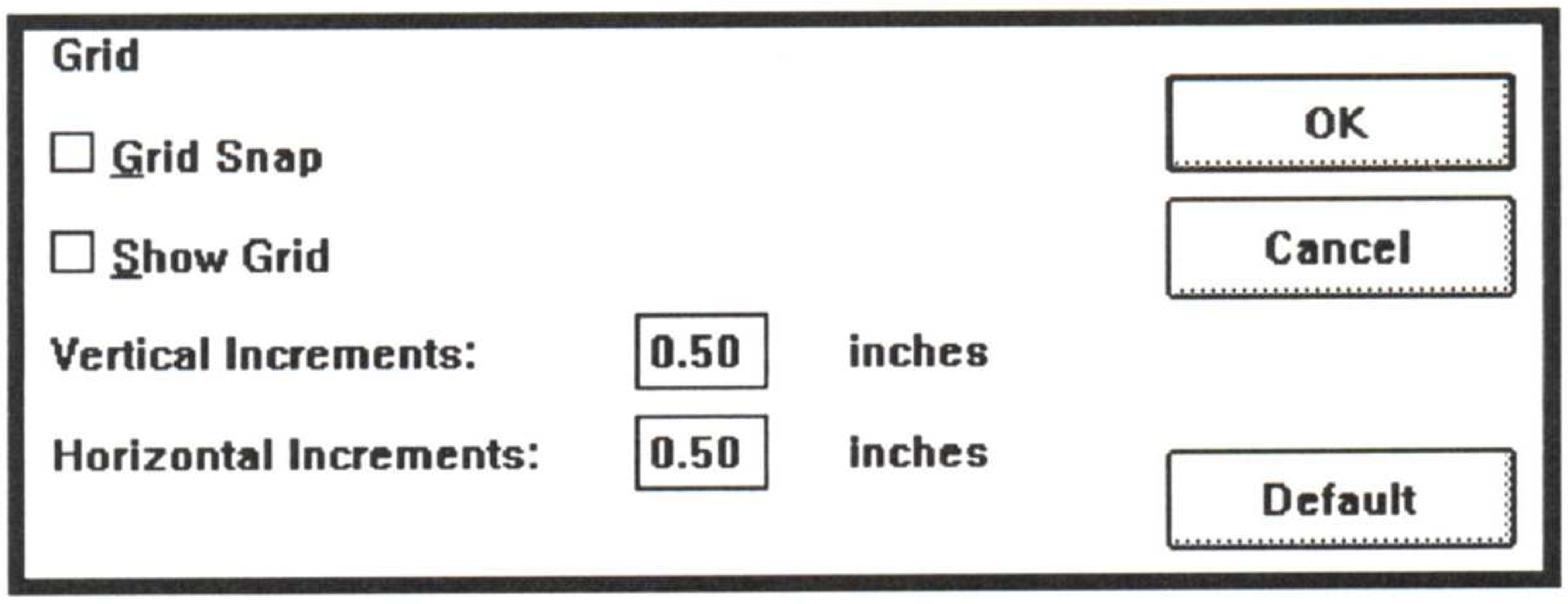
Turning On the Grid

☞ Hold down the CTRL key when creating, moving, or resizing objects to snap to the grid when Grid Snap is not on.

■ **To turn on the grid:**

1. Choose View Grid.

   A dialog box appears.



Grid

☐ Grid Snap

☐ Show Grid

Vertical Increments: 0.50 inches

Horizontal Increments: 0.50 inches

Figure 3-9 Setting Grid Increments

2. Enter the grid increments by typing a number in the Vertical and Horizontal Increments boxes.

   The vertical and horizontal increments control the amount of space between the grid lines. The number must be between 0.10 and 1.00. It is saved in LS.INI.

3. Select the Grid Snap box to turn grid snap on.

4. Select the Show Grid box to show the grid.

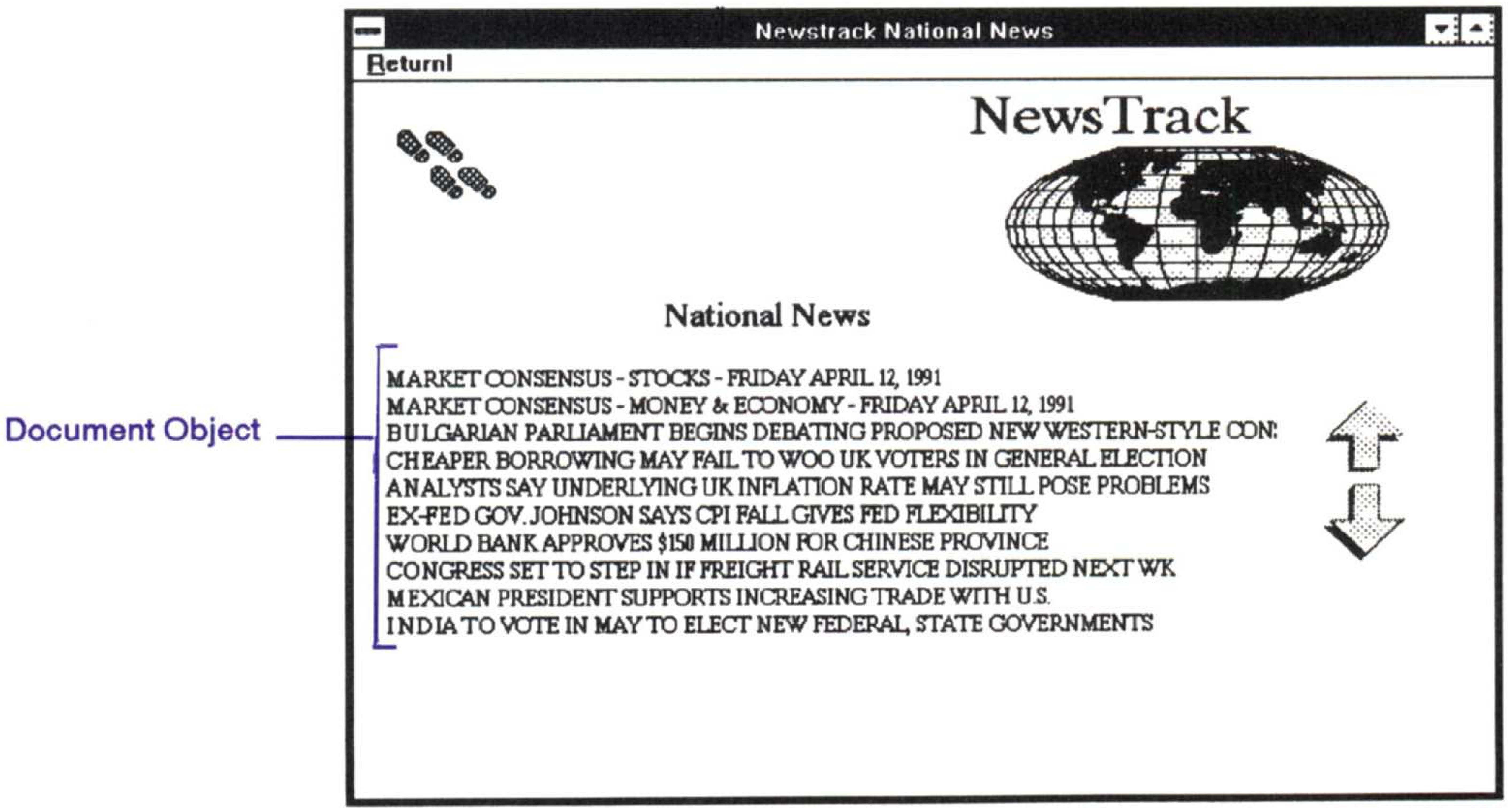
Chapter 4

Displaying Data

This chapter describes how to display, format, and color variances in data.

What is a Document Object?

You display data by creating a document object and then specifying the source of the data. Figure 4-1 shows a document object that displays news stories using a DDE Request to a database.



MARKET CONSENSUS - STOCKS - FRIDAY APRIL 12, 1991
MARKET CONSENSUS - MONEY & ECONOMY - FRIDAY APRIL 12, 1991
BULGARIAN PARLIAMENT BEGINS DEBATING PROPOSED NEW WESTERN-STYLE CON:
CHEAPER BORROWING MAY FAIL TO WOO UK VOTERS IN GENERAL ELECTION
ANALYSTS SAY UNDERLYING UK INFLATION RATE MAY STILL POSE PROBLEMS
EX-FED GOV. JOHNSON SAYS CPI FALL GIVES FED FLEXIBILITY
WORLD BANK APPROVES $150 MILLION FOR CHINESE PROVINCE
CONGRESS SET TO STEP IN IF FREIGHT RAIL SERVICE DISRUPTED NEXT WK
MEXICAN PRESIDENT SUPPORTS INCREASING TRADE WITH U.S.
INDIA TO VOTE IN MAY TO ELECT NEW FEDERAL, STATE GOVERNMENTS

Figure 4-1 A Document Object

Displaying Negative Numbers

- **To display negative numbers with parentheses:**

  Turn on (237.50).

- **To display negative numbers with a minus sign:**

  Turn on -237.50.

Displaying and Hiding Zeros

- **To suppress leading and trailing zeros:**

  Turn on .7.

  If you turn zero display off, leading and trailing zeros do not display.

- **To display leading and trailing zeros:**

  Turn on 0.70.

  If you turn zero display on, all trailing zeros display, but a leading zero appears only if there are no digits to the left of the decimal place. Only one leading zero will display.

Displaying Separators in Numbers

- **To enter a symbol to use as a separator:**

  Type a symbol in the 1000 Separator text box. For example, type a comma to display 1000 as 1,000. Leave the text box blank to display no separator.

Displaying Decimal Separators

- **To enter a symbol for a decimal separator:**

  Type a symbol in the Decimal Separator text box. For example, type a period (.) to use a dot as a decimal separator. Make the text box blank to have no separator.

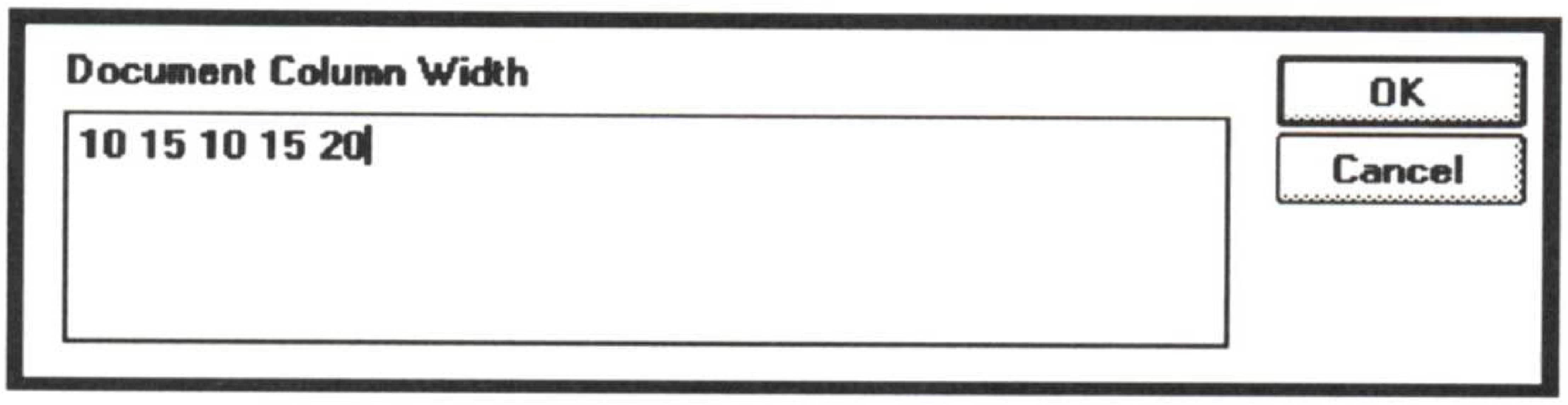
Specifying Column Widths

If you select any option except None, you can specify up to 20 columns for a document object.

■ **To specify column widths:**

1. Choose Document Column Width.

   A dialog box appears.



Document Column Width

10 15 10 15 20

Figure 4-12 Specifying Column Widths

2. Type one or more numbers for each column.

   These number(s) represent the characters across the column. If you enter a number for each column, the column widths are set to the numbers you enter. If you enter one number, it is interpreted as the width for every column. If you enter less numbers than there are columns, the last number repeats for the extra columns. For example, if you have six columns and you enter "10 15" the column widths will be "10 15 15 15 15 15."

   You can enter a zero to hide a column that you do not want to display. Columns to the right of a hidden column move to the left.

3. Choose OK.

Justifying Numbers or Text

- **To justify columns of numbers or text:**

1. Select the format object.
2. Choose Format Text Only if all you want to do is align columns. Numeric formatting turns off.
3. Choose Format Justification None, Left, Center, or Right.

   None is only available if Format Text Only is on.

Displaying Format Objects

Format objects do not normally show on the screen. You only see a rectangle when they are selected.

- **To display format objects:**

  Choose View Show Hidden Objects.

  All format objects appear with the word Format on them. Menu objects also display when View Show Hidden Objects is on.

  Or

  Choose View Outline All Objects.

  All objects on the screen are outlined with a dotted line.

☞ **Hint**

Document objects scroll fastest when they do not intersect with any other objects.

Scrolling a Document Object

- **To scroll up or down one line at a time:**

  Click the vertical scroll arrows, or press the UP ARROW or DOWN ARROW keys.

- **To scroll up or down one page (screen) at a time:**

  Click on either side of the vertical scroll box, or press the PGUP or PGDN keys.

- **To scroll sideways a line or column at a time:**

  Click the horizontal scroll arrows, or press the RIGHT ARROW or LEFT ARROW keys.

- **To scroll sideways a page at a time:**

  Click on either side of the horizontal scroll box.

Adding Window Scroll Bars

You can add vertical and horizontal scrolling capability to a document at the Browse level. Scroll bars only appear when the document is too large to display in the document object. You have the option to add scroll bars to the application window, which will scroll all scrollable documents, or to add local scroll bars to individual document objects.

You can choose Options Hide Scroll Bars to hide scroll bars on the application window at the Browse level.

- **To add scrolling to a document object at the Browse level:**

1. Select the document.

Disabling Formats

View Disable Formats only disables formats at the Author level.

- **To disable formats without changing any format settings:**

  Turn on View Disable Formats.

- **To enable formats again:**

  Turn off View Disable Formats.

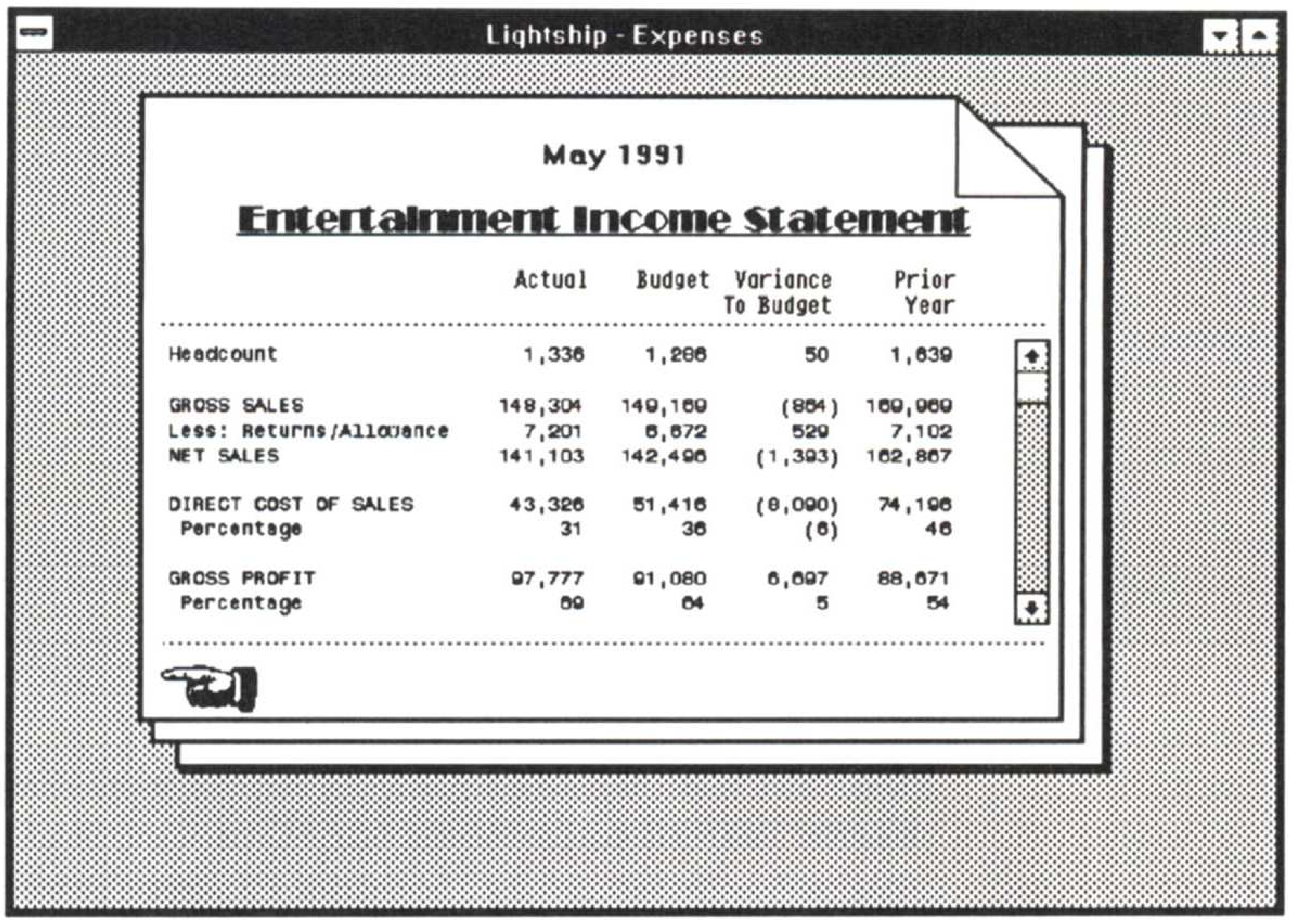
Coloring Variances

Variances are numbers that are greater or less than budgeted or projected figures. LightShip allows you to color variances differently than numbers that fall within an expected range. This is a useful feature for exception reporting.

You use format objects to define conditions to flag and color variances. LightShip colors the numbers associated with the format object if they meet the conditions. For example, Figure 4-21 shows a document where any negative number appears with a colored background.

A data that is formatted and colored by a format object is called the *destination*; the data used for comparison is called the *source*. Usually, the destination and the source are the same, however, you can define separate data as the source. For more information, see "Using a Separate Source to Define Variances" later in this section.

It is also possible to color a format object based on conditions you define. For more information, see "Coloring a Format Object" later in this section.



May 1991

Entertainment Income Statement

	Actual	Budget	Variance To Budget	Prior Year
Headcount	1,336	1,288	50	1,639
GROSS SALES	148,304	149,169	(864)	169,969
Less: Returns/Allowance	7,201	6,672	529	7,102
NET SALES	141,103	142,496	(1,393)	162,867
DIRECT COST OF SALES	43,326	51,416	(8,090)	74,196
Percentage	31	36	(6)	46
GROSS PROFIT	97,777	91,080	6,697	88,671
Percentage	69	64	5	54

Figure 4-13 A Document Object with Local Scroll Bars

Scrolling by Page

Documents scroll line by line by default when you use the scroll arrows or the DIRECTION keys. You can change it so that a document only scrolls a page at a time (even with the scroll arrows or the UP ARROW and DOWN ARROW keys) at the Browse level. A page is defined by the number of lines displayed in the document object.

When Scroll By Page is off, document objects with the same number of lines scroll together line by line. If one of them has less lines than another, it stops scrolling first. When Scroll By Page is on, document objects with the same number of lines scroll simultaneously. Document objects with a different number of line items scroll in relation to each other, depending on the number of lines in each document. For example, if one document object has half as many lines as another, it scrolls one line to the other document's two lines.

A dialog box appears.

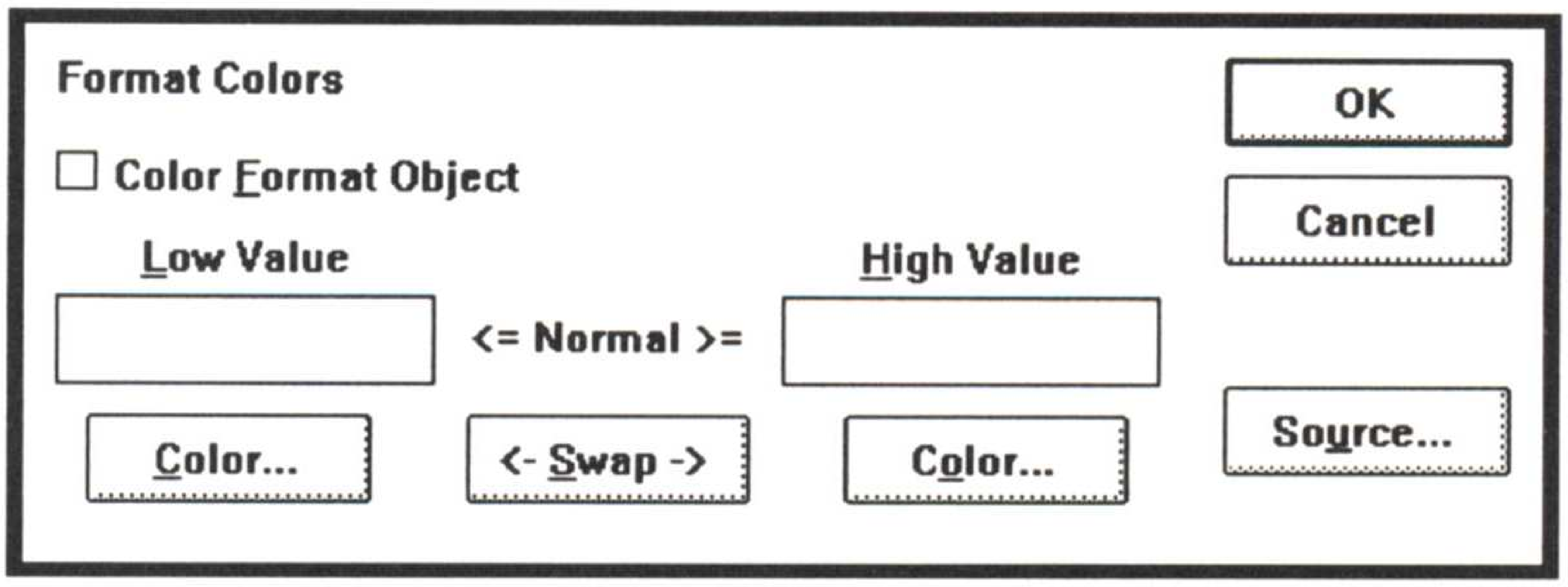


Figure 4-22 Defining Variance Conditions

4. Type a number in the Low Value or High Value text box, or both.

   You can also type a variable reference.

Selecting a Color

The default color for the low value is grey, while the default color for the high value is blue.

- **To select a color other than the default:**

1. Choose the Color button.

   The dialog box shown in Figure 4- 23 appears.

2. Select the color for the number(s).

3. Select the color for the numbers' background, or choose the Transparent button to make the background transparent.

4. Choose OK.

To reset the Bottom-right Corner:

Turn it off and on again.

Coloring a Document Object

To color the data and background in a document:

1. Select the document object.
2. Choose Document Color or press F5.

A dialog box appears.

☞ The quickest way to color is to press F5 and then double-click on the color.

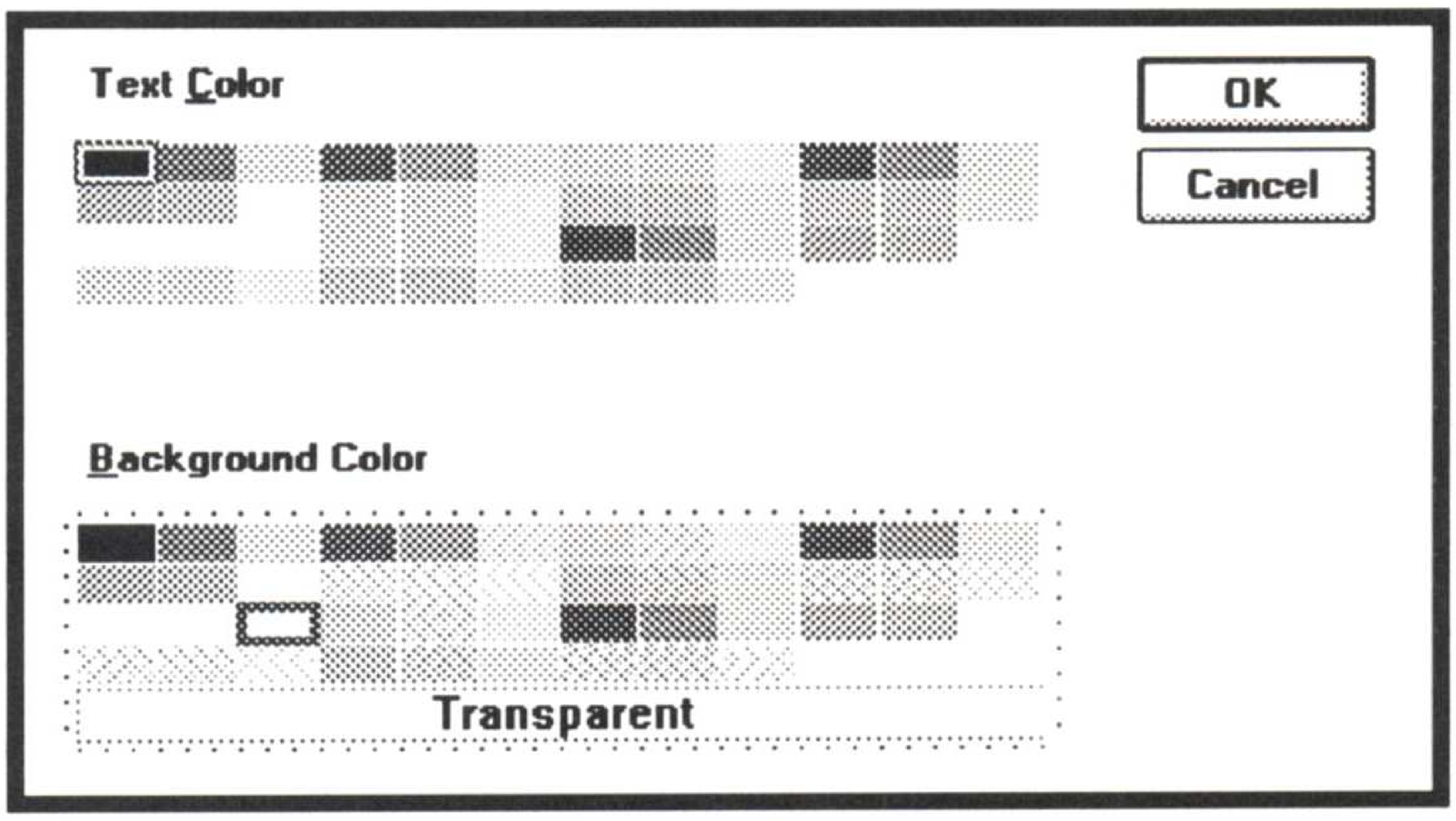


Figure 4-14 Assigning Colors

3. Select the color for the text.
4. Select the color for the background or click the Transparent button to make the background of the document transparent. The color behind the object will show through.
5. Choose OK.

Using the Format Colors dialog box, we typed a "1" in the Low Value text box. Then we choose the Color button and selected a foreground and a background color.

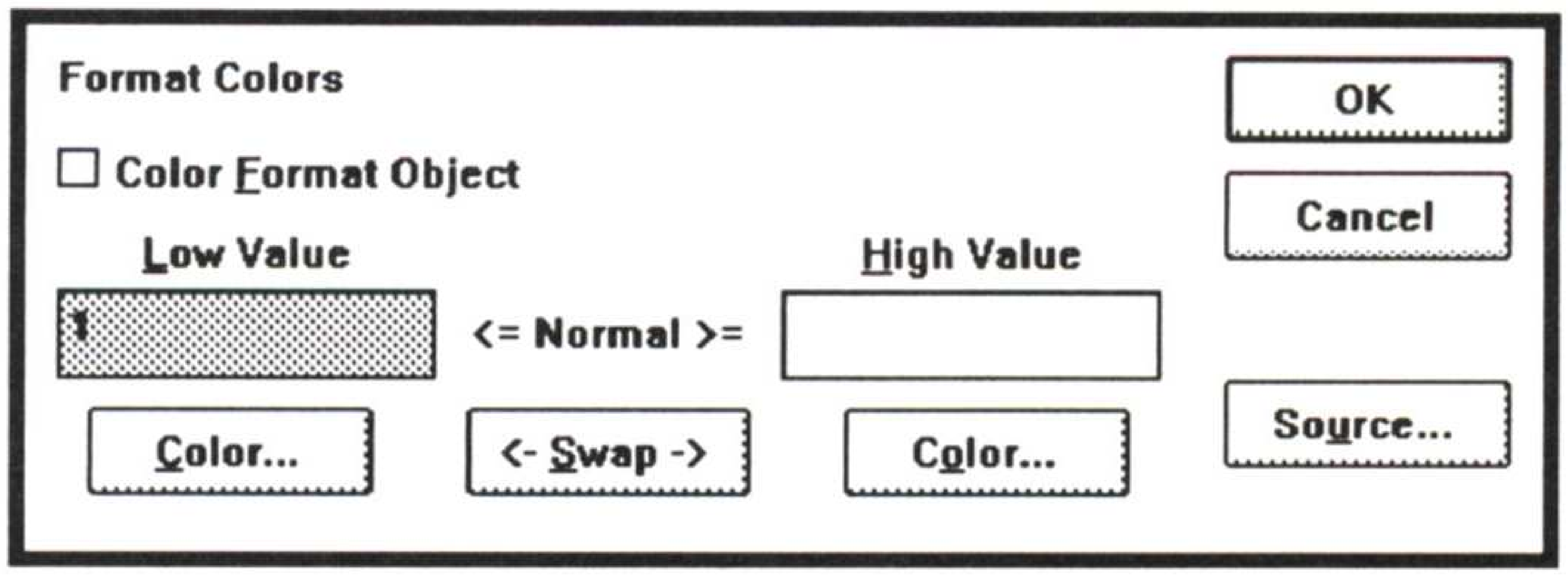


Figure 4-25 Defining the Variance Condition

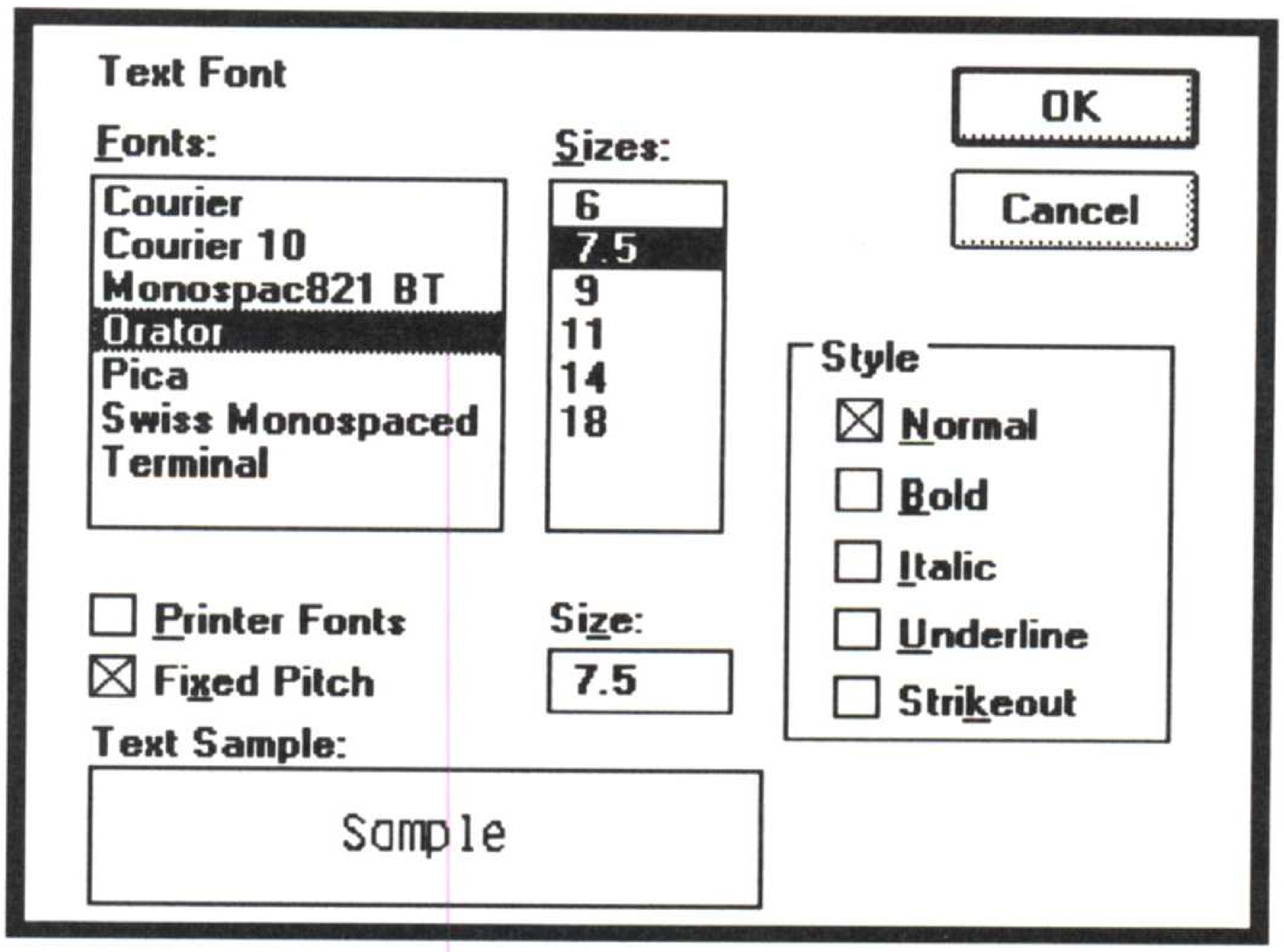
Using a Separate Source to Define Variances

You can use a separate data source for determining variances than the data being colored. The data that is formatted and colored by the format object is called the destination; the data that contains the numbers that are used for comparison is called the source. This is useful when the exception involves a calculation or a flag in database records, for example.

LightShip compares the source against the low and high values when you use the Source option on the Format Colors dialog box. The items in the source have a one-to-one relationship with the items in the destination. If you have less items in the source than in the destination, the extra items in the destination do not display variances. If you have more items in the source than in the destination, the extra items in the source will be ignored.

☞ **Note**

The destination document and the source document are the same by default. If there is no separate source document, the destination document serves as the source.



Text Font

Fonts:
Courier
Courier 10
Monospac821 BT
Orator
Pica
Swiss Monospaced
Terminal

Sizes:
6
7.5
9
11
14
18

☐ Printer Fonts
☒ Fixed Pitch

Size: 7.5

Text Sample: Sample

Style
☒ Normal
☐ Bold
☐ Italic
☐ Underline
☐ Strikeout

Figure 4-15 Choosing a Font

- **To list proportional screen fonts and font sizes:**

  Make sure the Printer Fonts and Fixed Pitch check boxes are turned off.

  Use proportional fonts for document objects with No Columns, Word Wrap, or Fill on.

- **To list available printer fonts and font sizes for the current printer:**

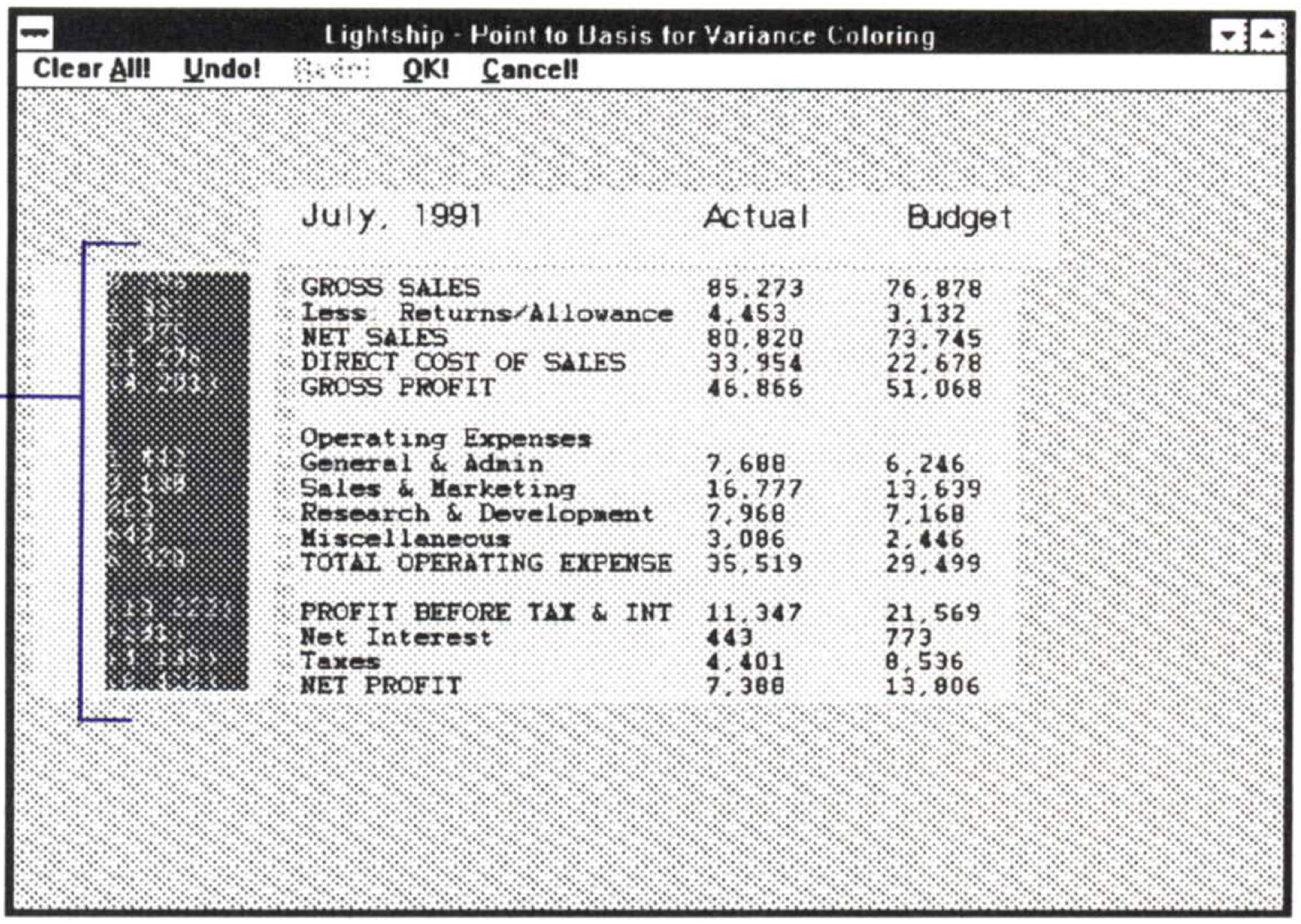
  Turn on the Printer Fonts check box.

3. Select the font you want.

   A sample of the selected font appears in the Text Sample box.

4. Select the point size from the Sizes list box or type it in the Size text box.

   Unless you have a Type Manager, if you type in a size that is not available, LightShip uses the closest available size. We recommend selecting a point size from the list.

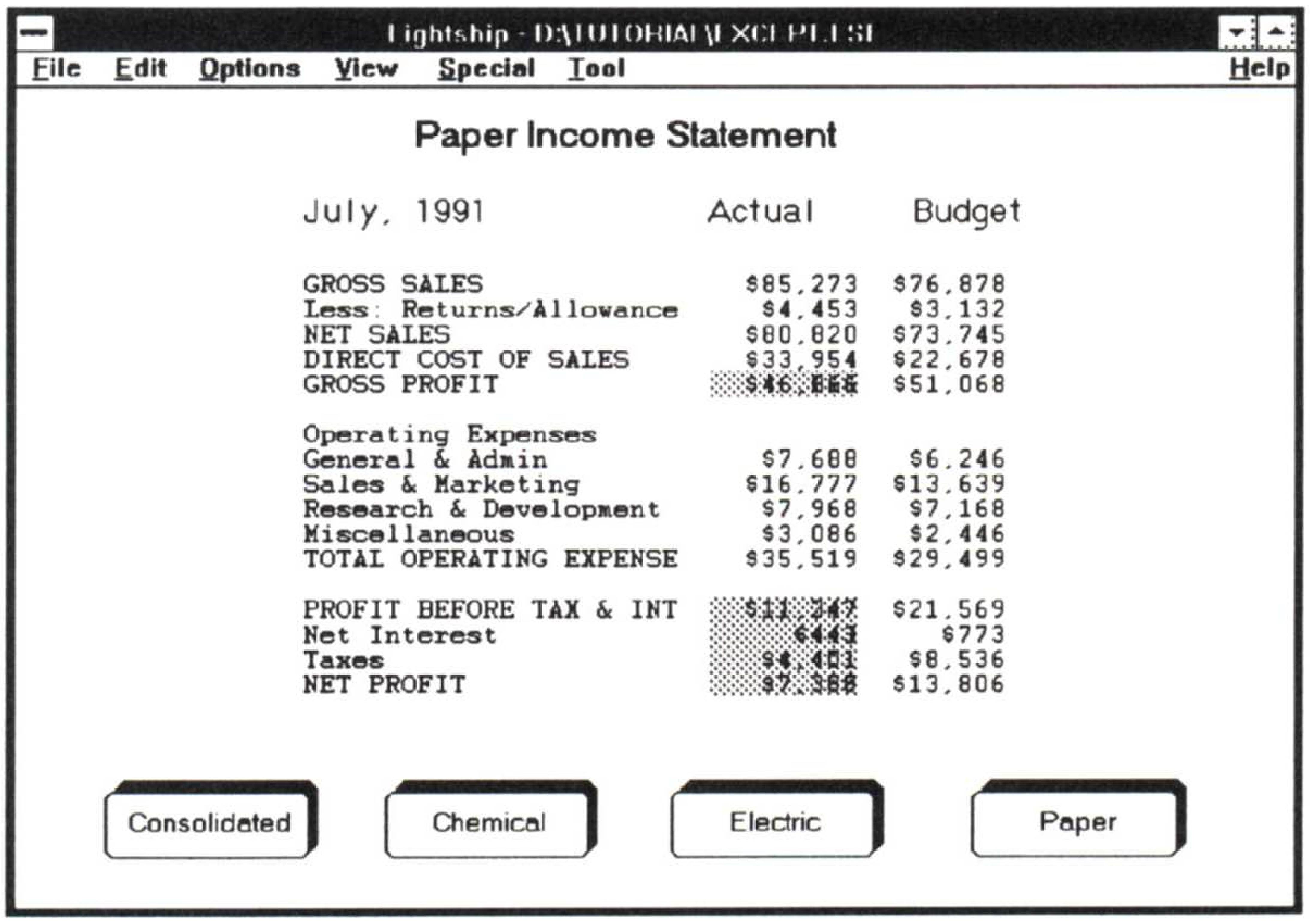


Source Document

July, 1991	Actual	Budget
GROSS SALES	85,273	76,878
Less: Returns/Allowance	4,453	3,132
NET SALES	80,820	73,745
DIRECT COST OF SALES	33,954	22,678
GROSS PROFIT	46,866	51,068
Operating Expenses		
General & Admin	7,688	6,246
Sales & Marketing	16,777	13,639
Research & Development	7,968	7,168
Miscellaneous	3,086	2,446
TOTAL OPERATING EXPENSE	35,519	29,499
PROFIT BEFORE TAX & INT	11,347	21,569
Net Interest	443	773
Taxes	4,401	8,536
NET PROFIT	7,388	13,806

Figure 4-27 Selecting Source Numbers

The Actual numbers are colored according to the conditions defined on the Format Colors dialog box and by the numbers defined as the source.



Paper Income Statement

July, 1991	Actual	Budget
GROSS SALES	$85,273	$76,878
Less: Returns/Allowance	$4,453	$3,132
NET SALES	$80,820	$73,745
DIRECT COST OF SALES	$33,954	$22,678
GROSS PROFIT	$46,866	$51,068
Operating Expenses		
General & Admin	$7,688	$6,246
Sales & Marketing	$16,777	$13,639
Research & Development	$7,968	$7,168
Miscellaneous	$3,086	$2,446
TOTAL OPERATING EXPENSE	$35,519	$29,499
PROFIT BEFORE TAX & INT	$11,347	$21,569
Net Interest	$443	$773
Taxes	$4,401	$8,536
NET PROFIT	$7,388	$13,806

Figure 4-28 Coloring Variances Defined by a Separate Document

When you select a document object, formatting is disabled and the document appears as it did before it was formatted. As soon as you deselect it, it displays the formatted data.

You can optionally color format objects based on conditions you define. Use this feature to hide or display another object. For more information, see "Coloring a Format Object."

Format objects do not normally display on the screen unless View Show Hidden Objects is on.

Format Object Rules

The following rules apply to format objects:

- One format object can only apply one format, that is, one set of attributes.
- You can use one format object to format multiple columns of data in multiple documents. However, each item that you format can only be formatted by one format object; that is, it can only be highlighted once in Point mode. The document object(s) formatted by a format object are called the *destination* object(s).
- The width of the area that highlights in Point mode is dependent on Document Column Delimiter and Document Column Width settings.

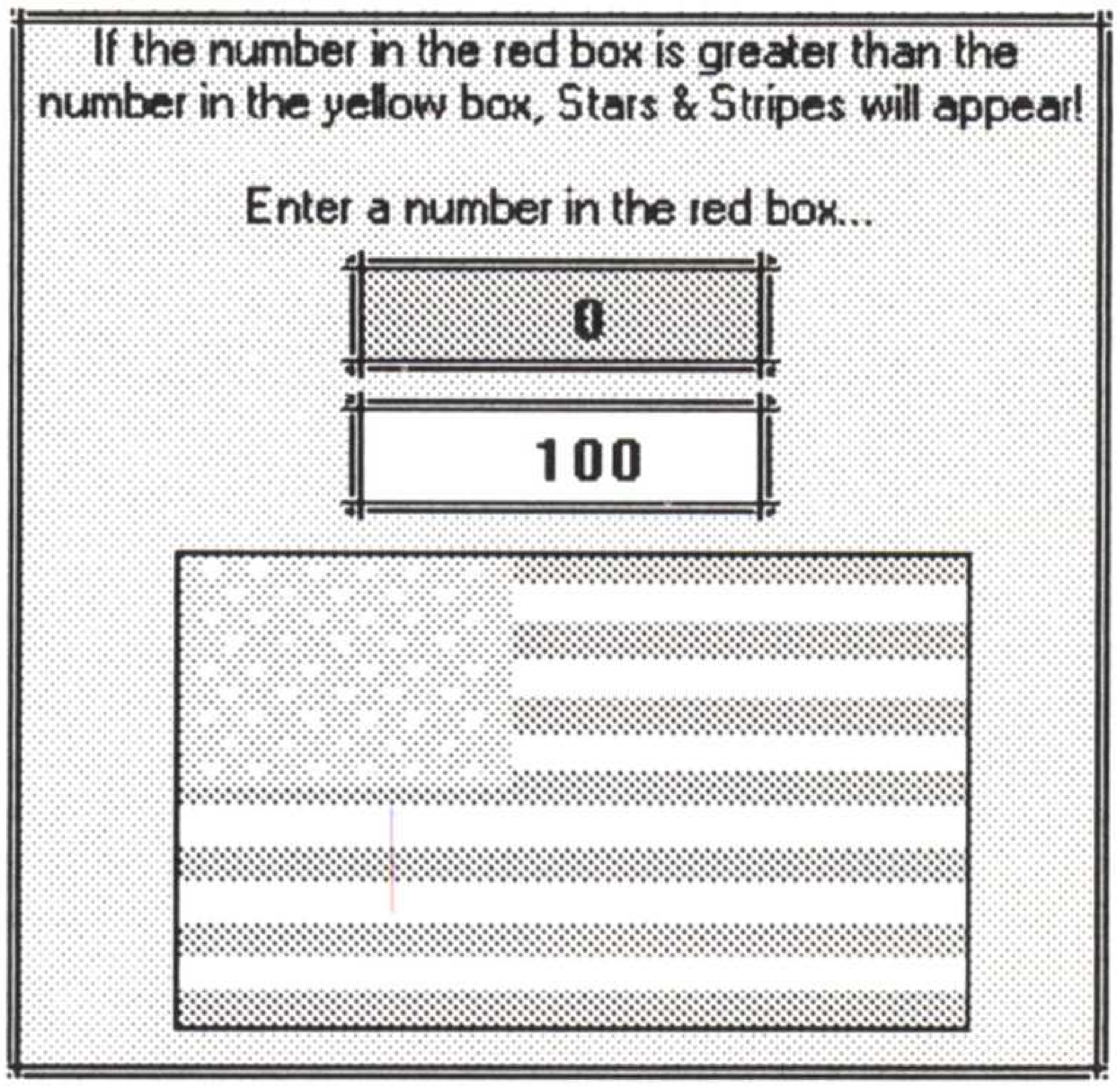
Creating a Format Object

The size of a format object is not important, but it is a good idea to put it where you can see it when View Show Hidden Objects is on.

■ **To create a format object:**

1. (Optional) Choose View Hidden Objects.

2. Choose Tool Format.



If the number in the red box is greater than the number in the yellow box, Stars & Stripes will appear!

Enter a number in the red box...

0

100

Figure 4-29 Creating an Image Object

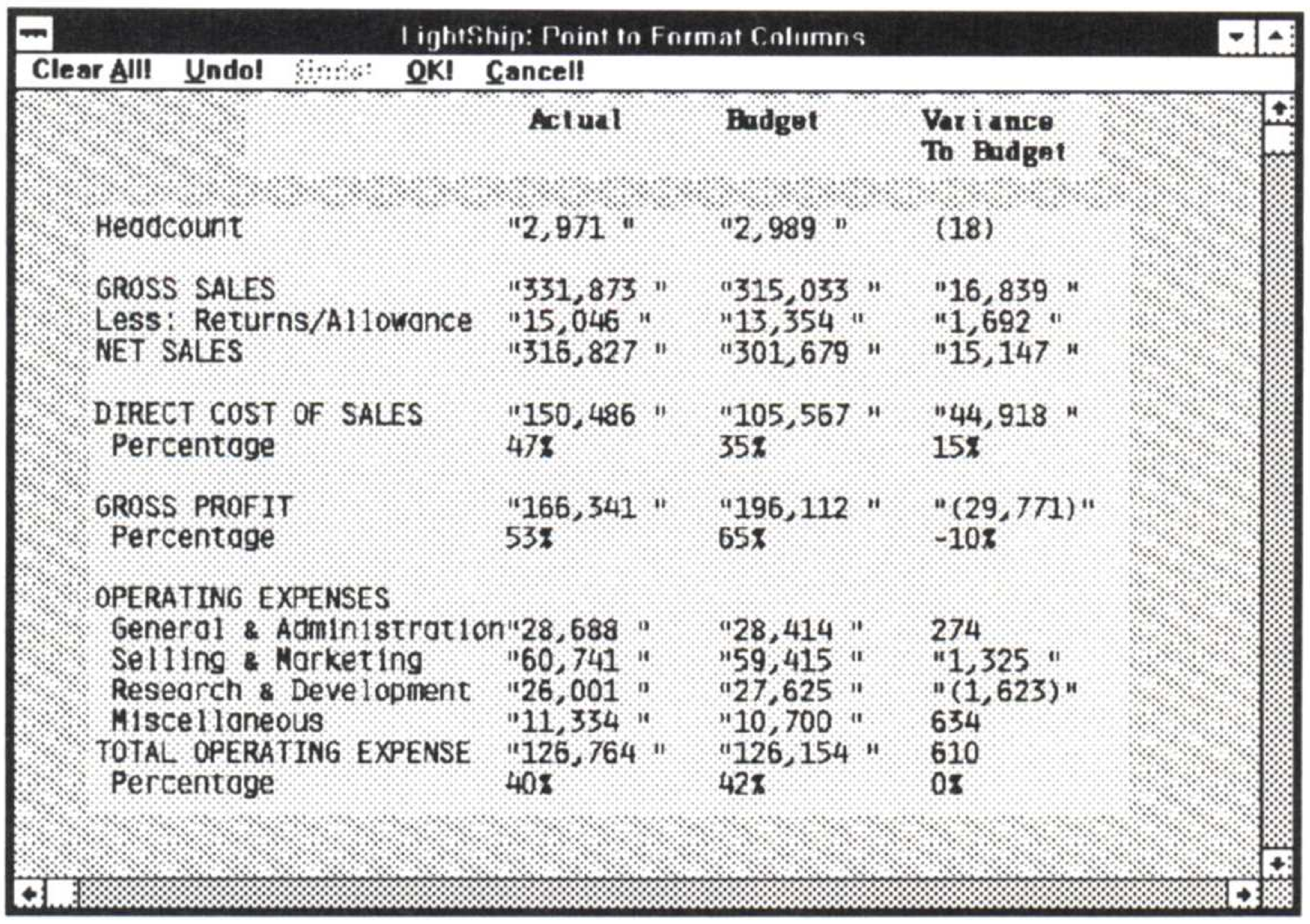
Coloring a Format Object

■ **To color a format object:**

1. Create or select a format object.
2. Define the destination or source data, or both.
3. Define the conditions.
4. Define the colors so that the text color of the low or high value is the color of the screen background.
5. Choose Format Color.
6. Choose OK.

Example

Let's look at the example shown in Figure 4-29. After creating the image object, you would create a format object large enough to cover the image object.



```
                          Actual       Budget       Variance
                                                    To Budget

Headcount                 "2,971 "     "2,989 "     (18)

GROSS SALES               "331,873 "   "315,033 "   "16,839 "
Less: Returns/Allowance   "15,046 "    "13,354 "    "1,692 "
NET SALES                 "316,827 "   "301,679 "   "15,147 "

DIRECT COST OF SALES      "150,486 "   "105,567 "   "44,918 "
 Percentage               47%          35%          15%

GROSS PROFIT              "166,341 "   "196,112 "   "(29,771)"
 Percentage               53%          65%          -10%

OPERATING EXPENSES
 General & Administration"28,688 "     "28,414 "    274
 Selling & Marketing      "60,741 "    "59,415 "    "1,325 "
 Research & Development   "26,001 "    "27,625 "    "(1,623)"
 Miscellaneous            "11,334 "    "10,700 "    634
TOTAL OPERATING EXPENSE   "126,764 "   "126,154 "   610
 Percentage               40%          42%          0%
```

Figure 4-17 Point Mode

Selecting Data to Format

To select the data:

1. Drag the mouse over the items that you want to format.

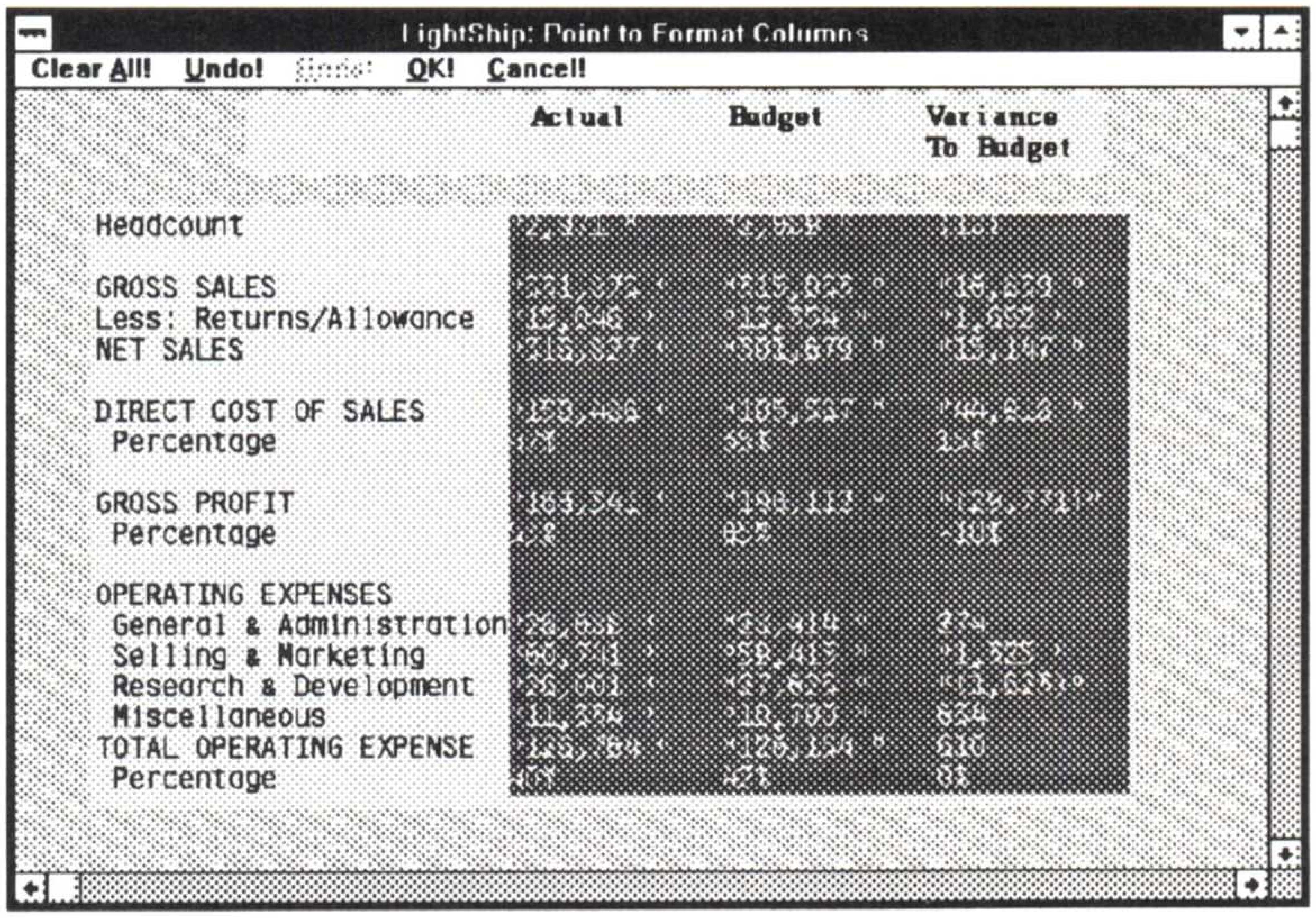


Figure 4-18 Selecting Columns

A document object can display data:

- From an ASCII text file
- From an application that uses Window's DDE protocol
- That you type in from the keyboard, either at the Author or Browse level
- From a variety of other external sources, such as dBASE® files and SQL servers

The Document Menu

When you create or select a document object, the Document menu appears on the menu bar. Use this menu to:

- Change the data source.
- Specify layout, column delimiters, and widths.
- Hide the document.
- Add scroll bars.
- Anchor the data to the top and bottom of the window.
- Enable data entry in a document object at the Browse level.
- Choose colors for the data and background.
- Choose a font, point size, and style for characters.

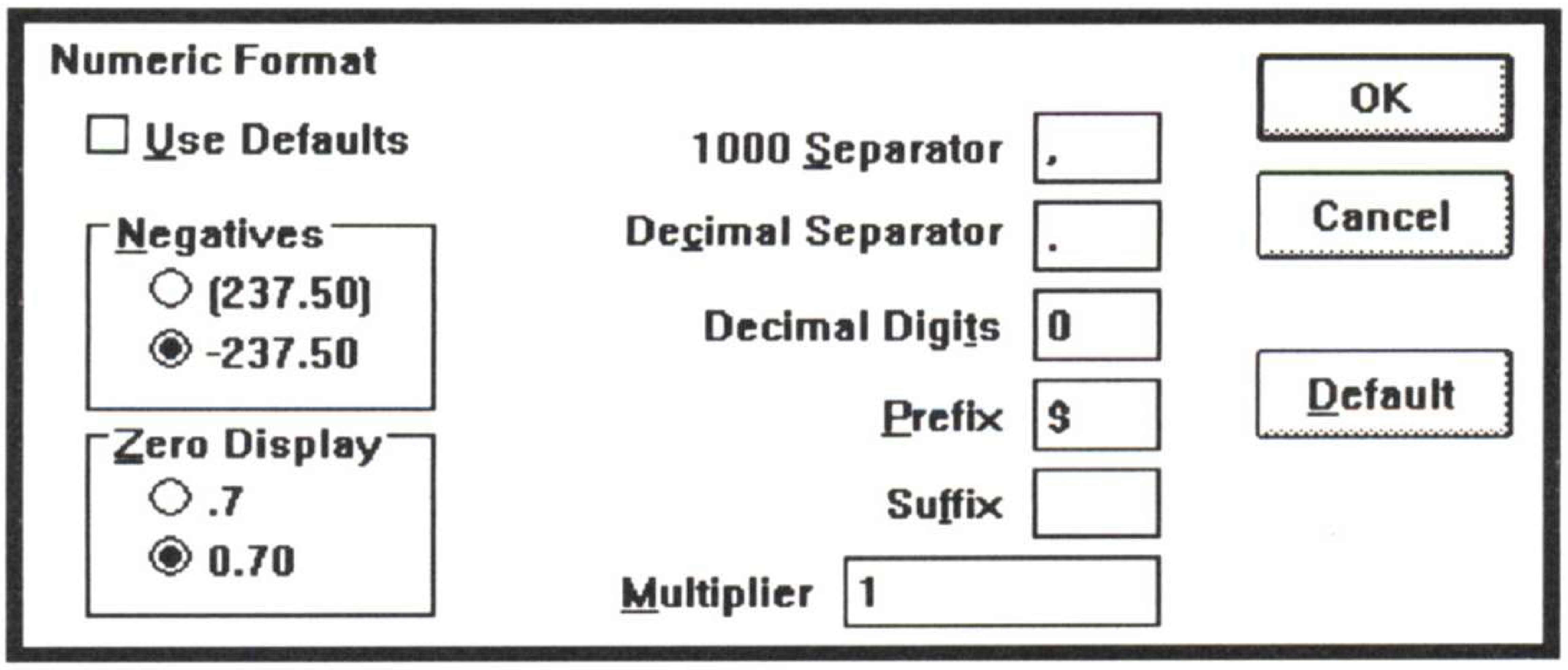
Formatting a Document Object

You format the data in a document by creating a format object. Format objects allow you to:

- Align text or numbers
- Format numbers, for example, $1,000.00
- Color variances in the data

When Document Object Data is Updated

LightShip displays the most current data in a document object whenever you open a screen. LightShip also automatically updates document objects at other times, as described below. In addition to automatic updates, you can manually update document objects by issuing a Calculate Now command.



Numeric Format

☐ Use Defaults

Negatives

○ (237.50)

● -237.50

Zero Display

○ .7

● 0.70

1000 Separator: ,

Decimal Separator: .

Decimal Digits: 0

Prefix: $

Suffix:

Multiplier: 1

Figure 4-20 Formatting Numbers

Initially, the settings in this dialog box are taken from the Country settings in the [intl] section of your WIN.INI file. To change these settings, open the Control Panel and choose Settings International.

■ **To use the settings in WIN.INI to define the numeric format:**

Turn on the Use Defaults option.

When this option is on, any change you make to the Country settings is also made in LightShip. The WIN.INI settings override any other settings in this dialog box except the Multiplier. If you prefer to leave Use Defaults off, you can still make the settings match those in WIN.INI by choosing the Default button.

4. Otherwise, make your selections.

5. Choose OK.

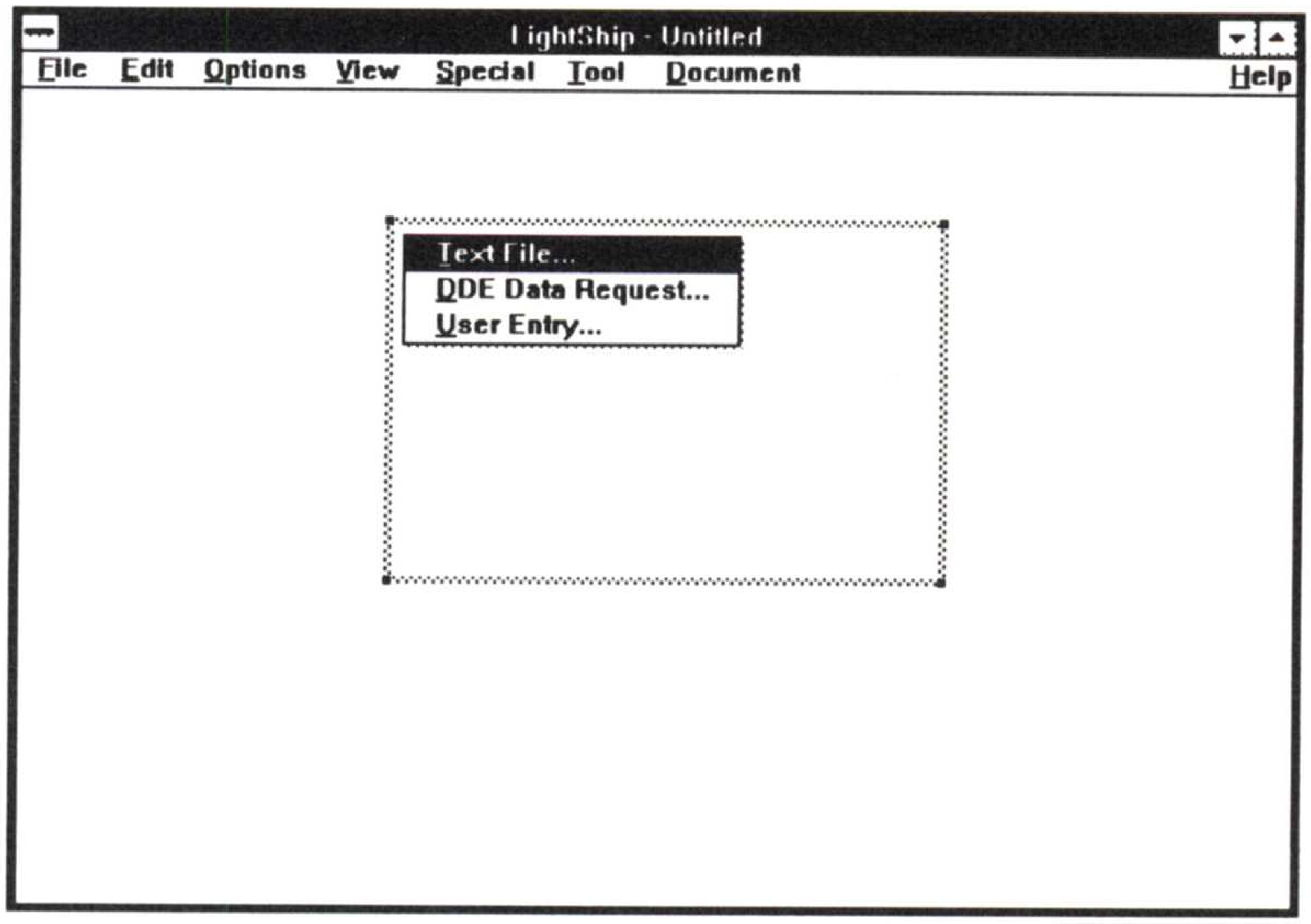


Figure 4-2 Specifying a Data Source

4. Choose one of the menu items.
   - Choose Text File to display an ASCII text file. For more information, see the next section "Displaying a Text File."
   - Choose DDE Data Request to display data from an application that uses DDE. For more information, see "Displaying Data from a DDE Request."
   - Choose User Entry to type data into the document object from the keyboard. For more information, see "Creating a User-Entry Document Object."

Displaying a Text File

Text files must be in ASCII text format.

When you choose Text File from the Document Source menu, the Document Text File dialog box appears (see Figure 4-3).

Displaying Decimal Digits

■ **To specify the number of decimal digits to display:**

Type the number of decimal places you want after the decimal separator. Enter a zero for none. Make this text box blank if you want a General format. A General format has floating decimal places as required by the data, and decimal points are not aligned (see below).

```
  $12.123
 $-11.65
      $0
      $1
  $0.374
   $0.01
$136.5987
```

Displaying a Prefix

■ **To display a numeric prefix:**

Type a symbol, for example, dollars ($) or yen (¥), in the Prefix text box.

Displaying a Suffix

■ **To display a numeric suffix:**

Type a suffix, for example, DM, in the Suffix text box.

Choosing a Multiplier

Choose a multiplier if your numbers are too large to display on the screen.

■ **To specify a multiplier:**

Type a decimal number that you want to multiple by. For example, to display 1,000,000 as 1,000, type .001.

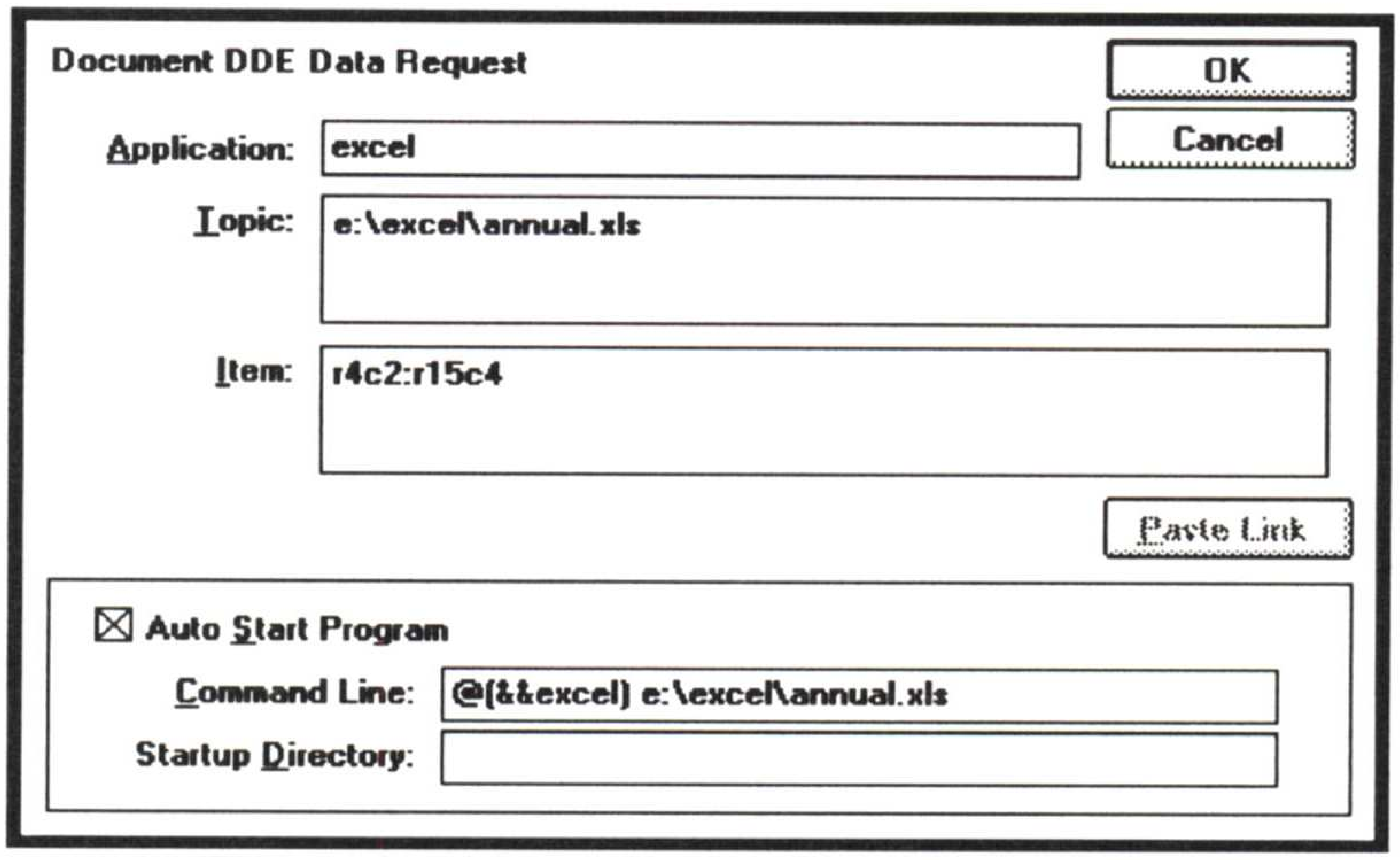
4. Position the data in the document object with the scroll bars, or the DIRECTION or PAGE keys.

   For information about defining scrolling attributes, see "Scrolling a Document."

5. Resize the document window so that only the data you want is showing.

Displaying Data from a DDE Request

When you choose DDE Data Request from the Document Source menu, the dialog box shown in Figure 4-4 appears. This figure shows a DDE Request to an Excel spreadsheet.



Document DDE Data Request

Application: excel

Topic: e:\excel\annual.xls

Item: r4c2:r15c4

☒ Auto Start Program

Command Line: @(&&excel) e:\excel\annual.xls

Startup Directory:

Figure 4-4 Defining a DDE Data Request

The program that you are requesting data from is called the *server* or the *server application*. It must support the Clipboard Text (CF_TEXT) format. This is a basic format supported by most applications.

The exact form of the DDE Request varies, depending on the server application. However, all applications using DDE must

Changing a Format

■ **To change destination data:**

1. Select the format object.
2. Choose Format Destination.

   The Point mode screen appears.
3. Choose Clear All! to deselect all highlighted areas or choose Undo! to deselect the last area you selected.
4. Select the items you want.
5. Choose OK! on the menu bar.

Changing Numeric Formatting

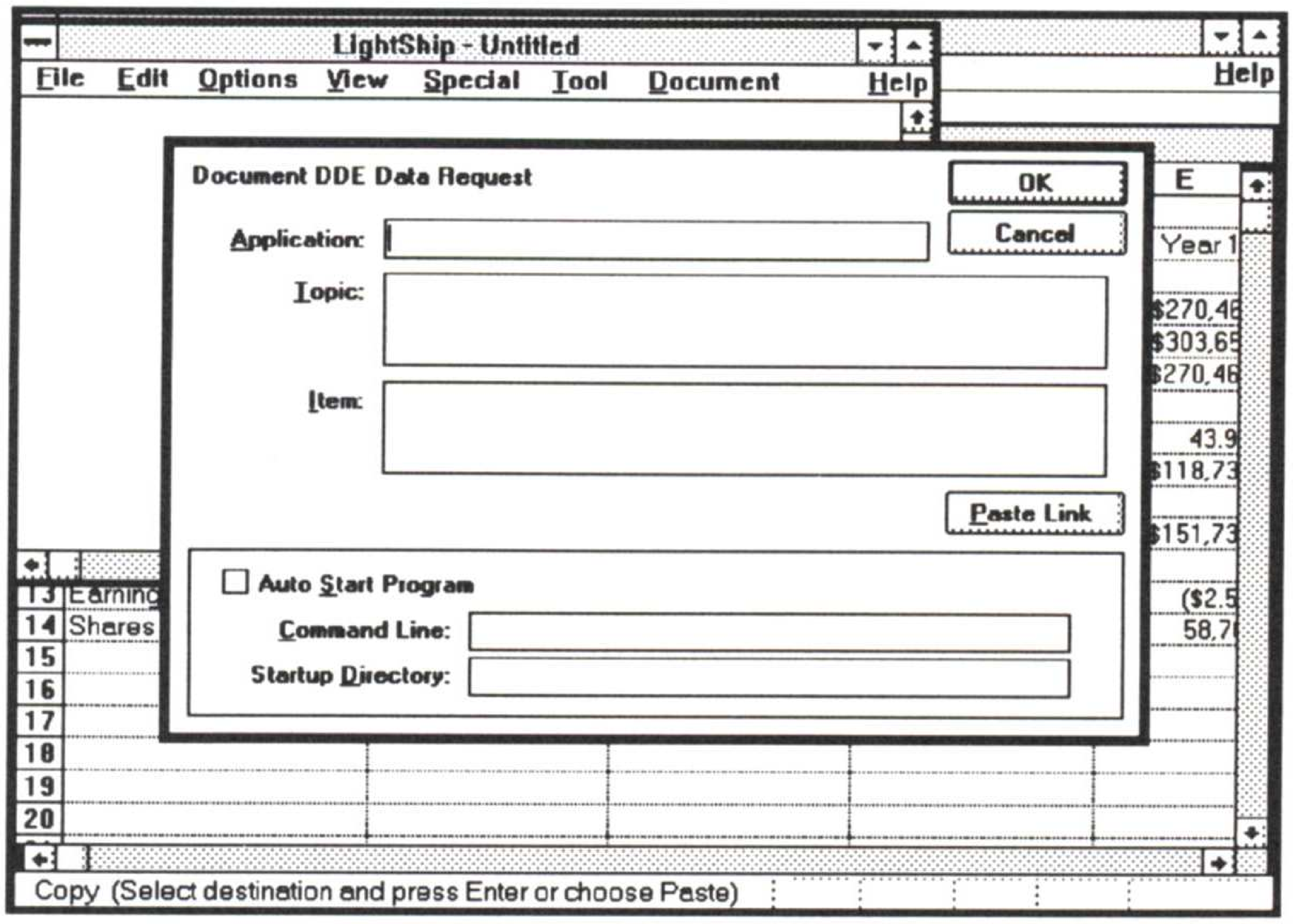
■ **To change numeric formatting:**

1. Select the format object.
2. Choose Format Numeric Format, press F2, or double-click on the format object.
3. Make your selections.
4. Choose OK.

Changing Justification

■ **To change justification:**

1. Select the format object.
2. Choose Format Justification None, Left, Center, or Right.



Copy (Select destination and press Enter or choose Paste)

Figure 4-5 Pasting Data from the Server

4. (Optional) To start the server application in a different directory than the current one, type the drive and directory in the Startup Directory text box.

   This lets you use files in that directory without specifying a path. The current working directory remains the same.

5. Choose OK.

   The data appears in the document object. For information about changing column widths, see "Defining Columns."

DDE Requests

When Calculation Automatic is on, document objects whose source is a DDE Request are updated when:

- Source data changes.
- A literal or variable reference in a DDE Request dialog box changes.

When Calculation Manual is on, if you make a literal change to a DDE Request dialog box, you are prompted to execute the request.

Text Files

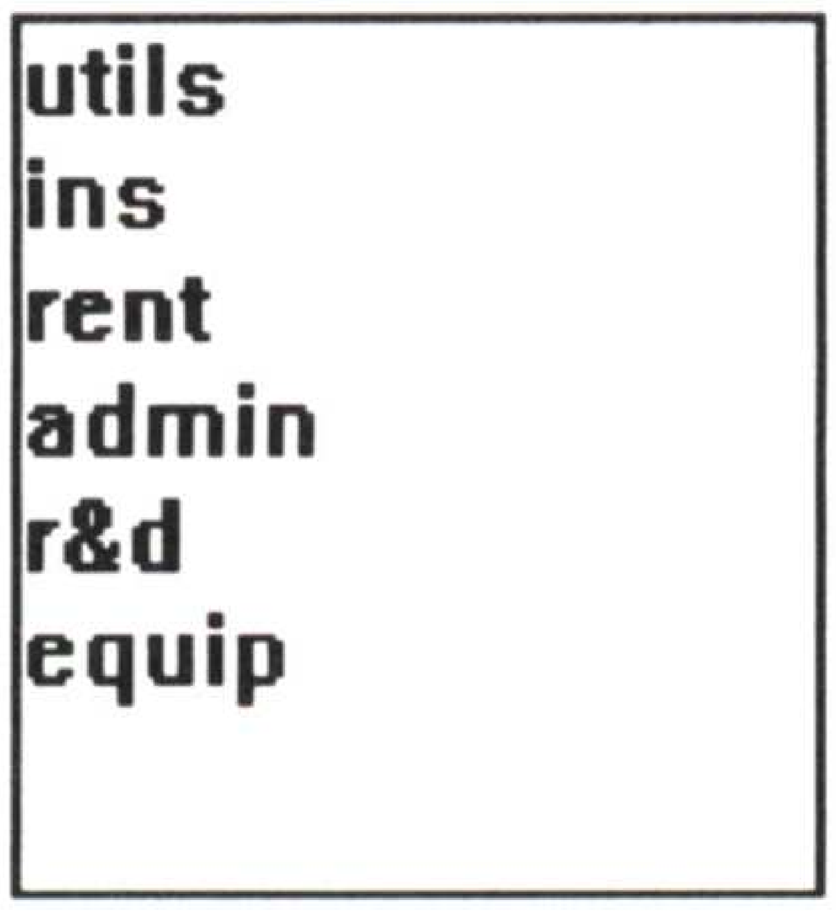
Document objects whose source is a text file are always updated when you make a literal change to the filename. If Calculation Automatic is on, and a variable reference in the filename changes, the document object is also updated.

Creating a Document Object

■ **To create a document object:**

1. Choose Tool Document.
2. Drag or click the mouse to create the object.
3. Choose Document Source, press F2, or double-click on the document object.

   The Document Source menu displays, as shown in Figure 4-2.



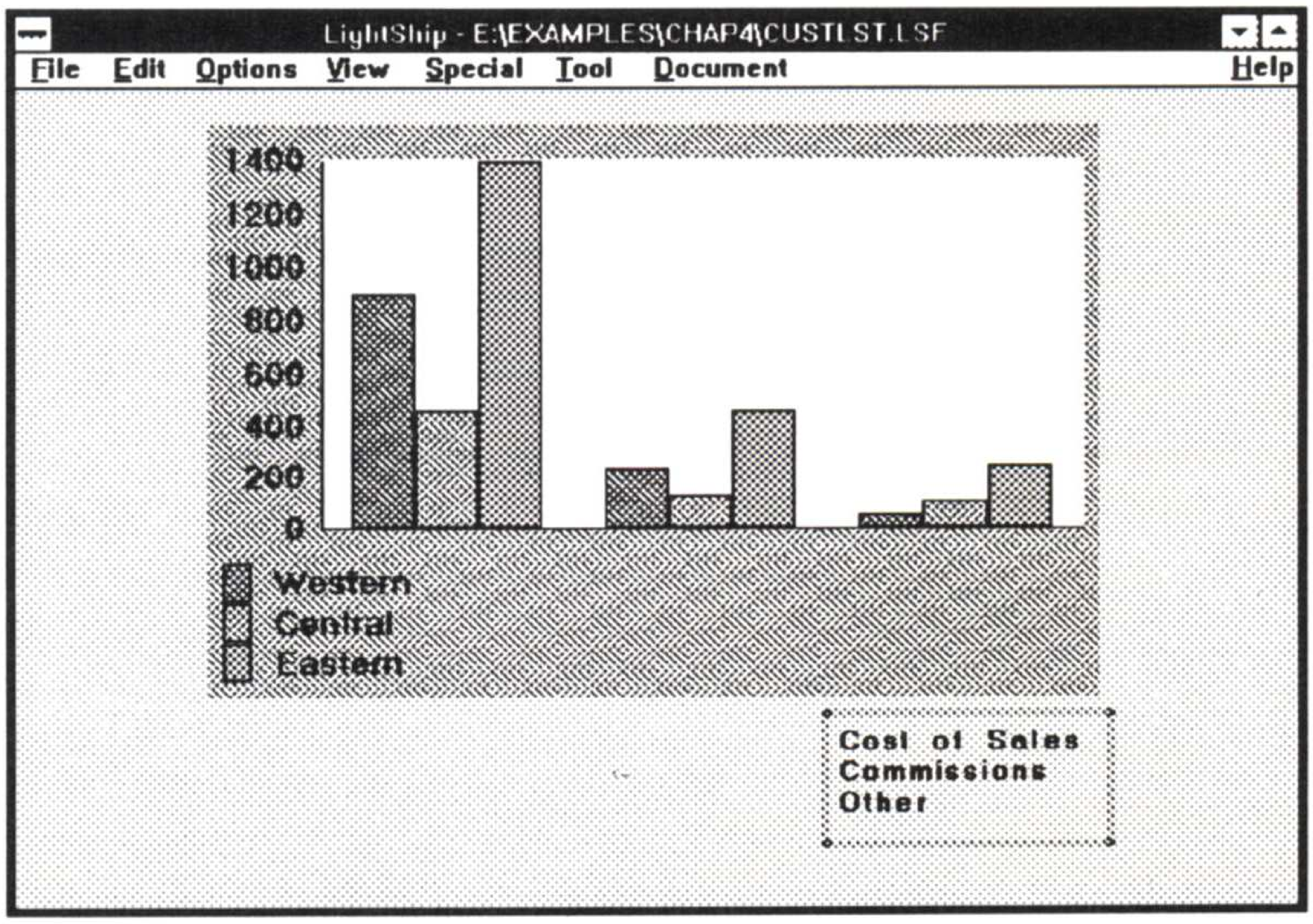
utils
ins
rent
admin
r&d
equip

Figure 4-6 Typing in Data

2. To finish, press ENTER.

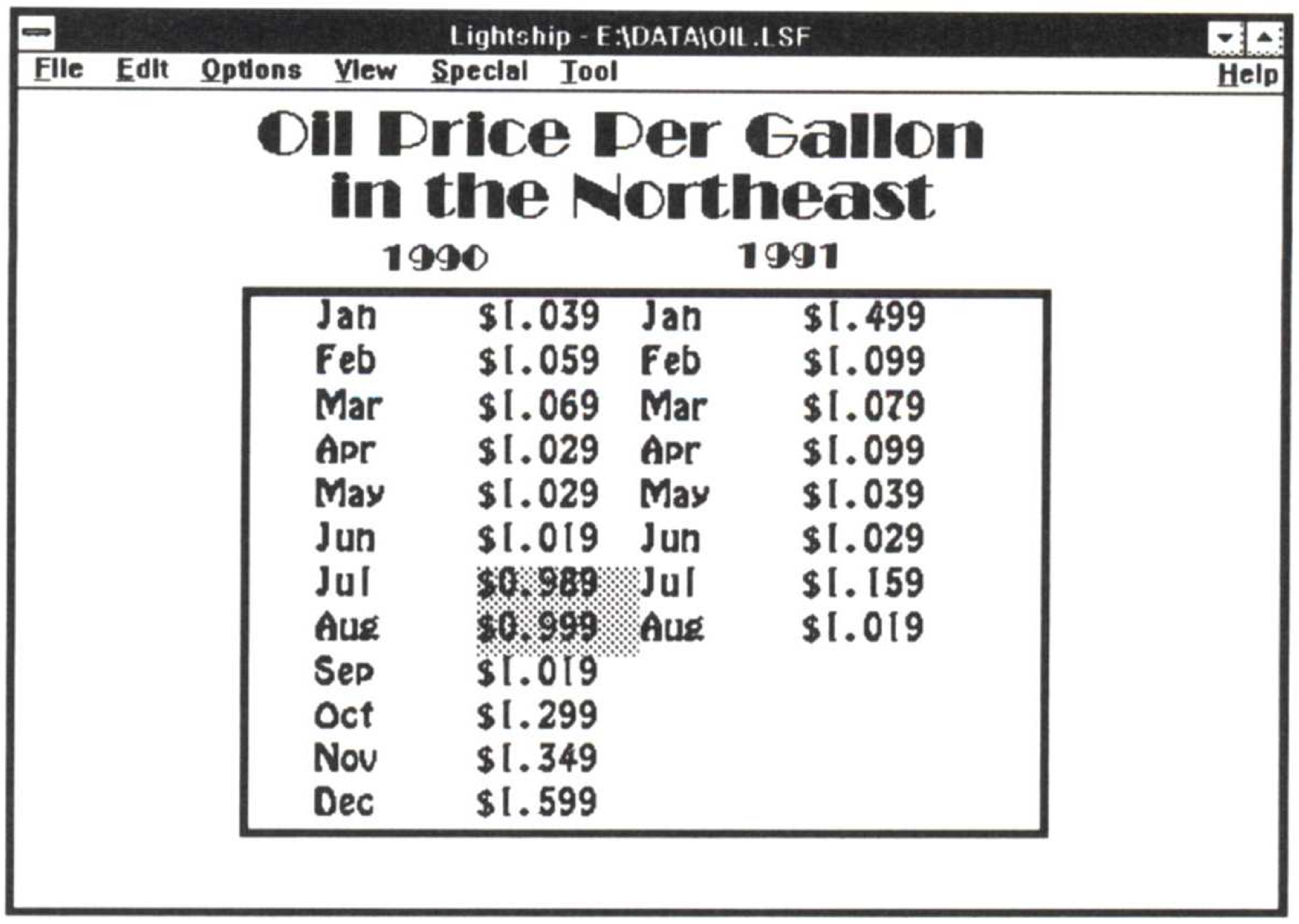
Creating a Customized List

You might want to create a customized list of chart labels or values to assign to variables in Point mode. For example, Figure 4-7 shows a list of chart labels.



Cost of Sales
Commissions
Other

Figure 4-7 Typing in a List



Oil Price Per Gallon in the Northeast

1990		1991	
Jan	$1.039	Jan	$1.499
Feb	$1.059	Feb	$1.099
Mar	$1.069	Mar	$1.079
Apr	$1.029	Apr	$1.099
May	$1.029	May	$1.039
Jun	$1.019	Jun	$1.029
Jul	$0.989	Jul	$1.159
Aug	$0.999	Aug	$1.019
Sep	$1.019		
Oct	$1.299		
Nov	$1.349		
Dec	$1.599		

Figure 4-21 Displaying Variances

Defining Variances

The Format Colors dialog box allows you to define the low and high variance values and select the colors associated with them. If a number is less than or equal to the low value, or greater than or equal to the high value, it is colored accordingly. If not, the numbers remain the same color as the rest of the document object. The numbers are colored based on actual numbers displayed in the document object without taking the Multiplier (from the Numeric Format dialog box) into account.

■ **To define conditions for coloring variances:**

1. Create or select a format object.

2. Choose Format Destination and select the data you want to format.

3. Choose Format Color or press F5.

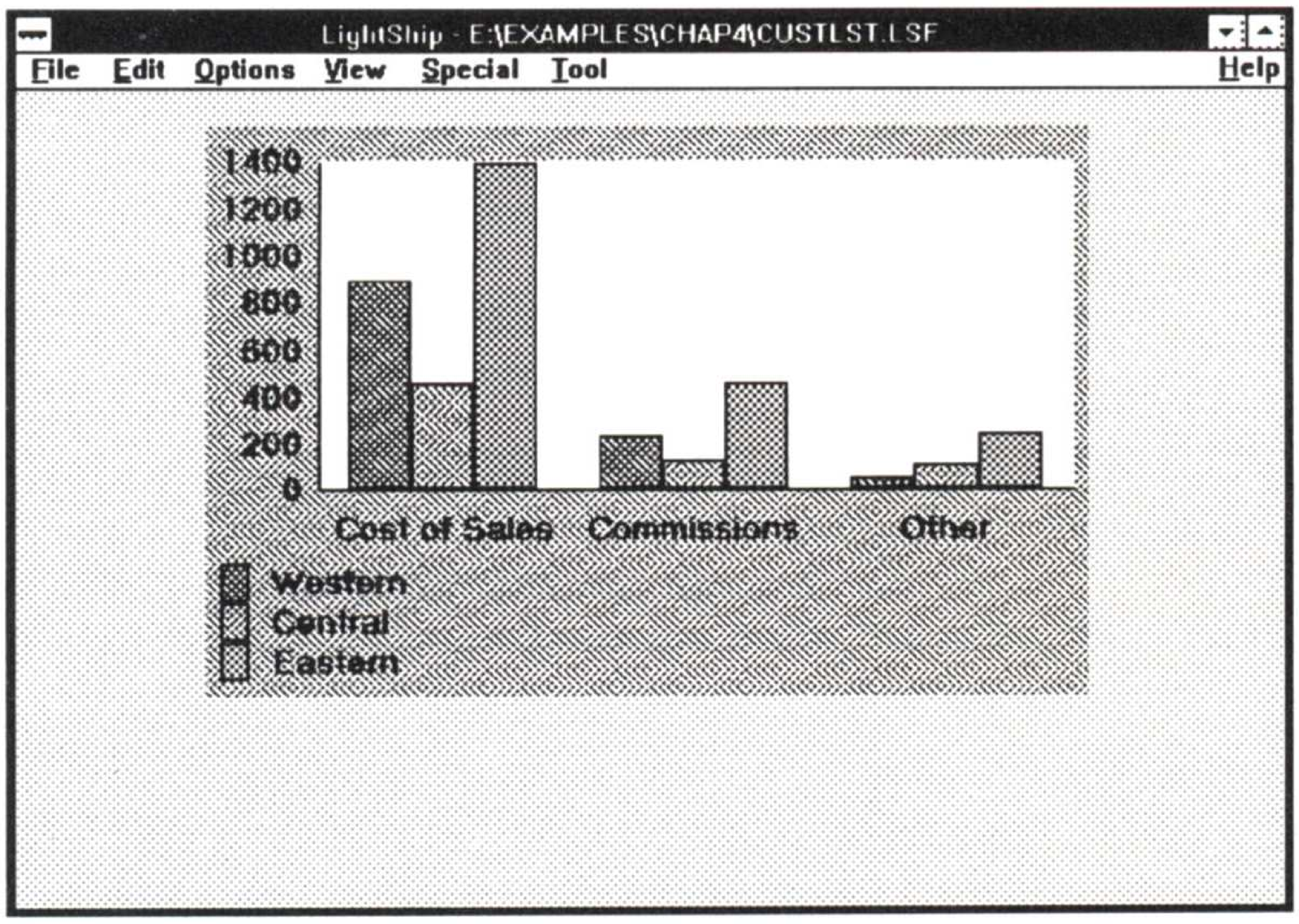


Figure 4-9 Displaying Chart Labels from a User-Entry Document

Creating an Interactive Document

Interactive document objects allow you to type into them at the Browse level and cause some other action to be executed. You can also have hotspots behind the document, which execute after data entry happens.

To create an interactive user-entry document, you must turn on Document User Edit and type a variable reference into the document object. Any text that you type into the document at the Browse level is stored in the variable and appears in the document. A variable value also appears in the document at the Author level. The variable reference does not show on the screen, unless you choose Document Source and then User Entry.

☞ **Important**

If you enter text, a nested variable reference (for example, *@(@(item)))*, or multiple variable references, and type into the document at the Browse level, whatever was in the document object previously is overwritten. No values are stored in nested or multiple variances references.

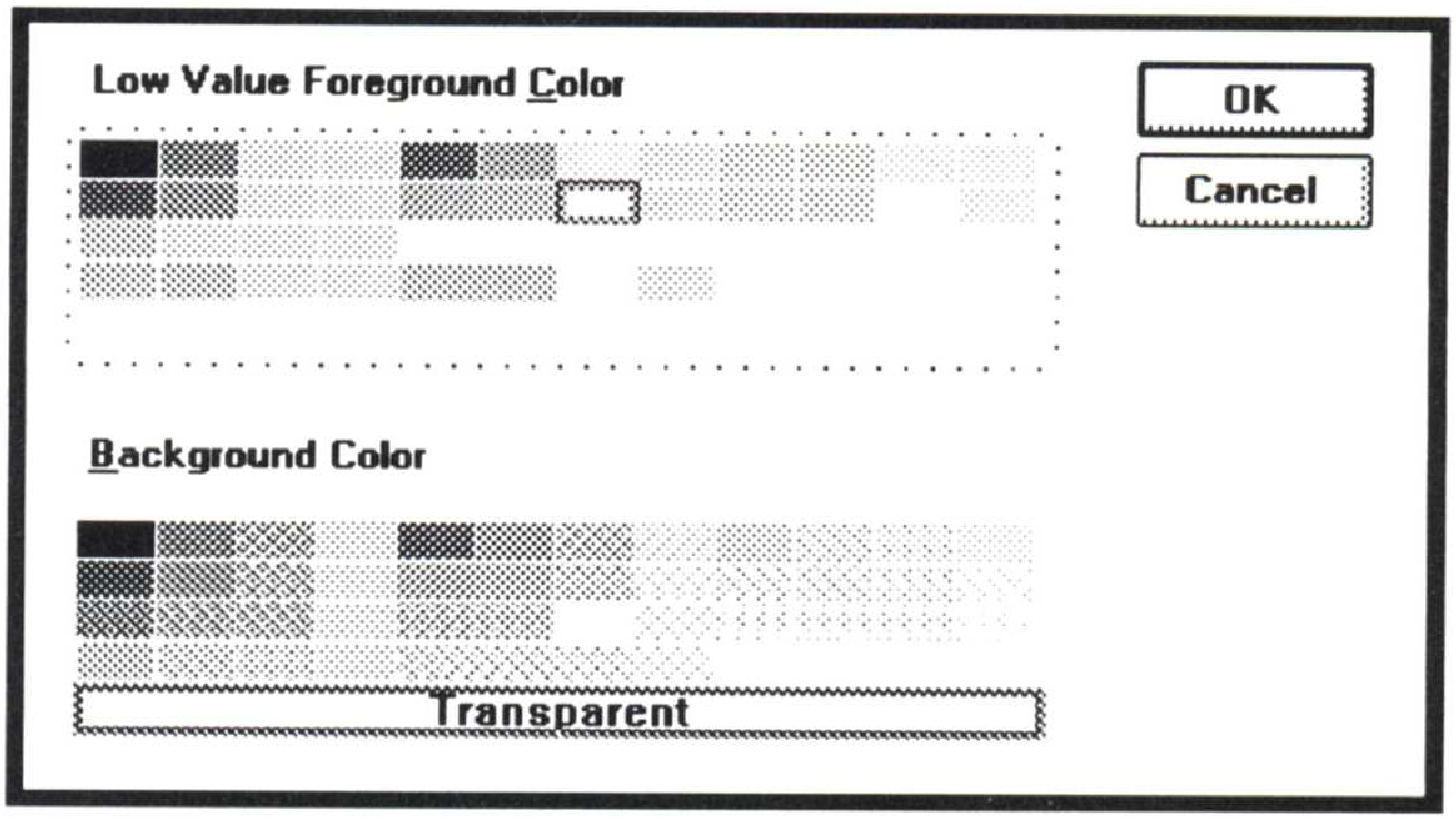


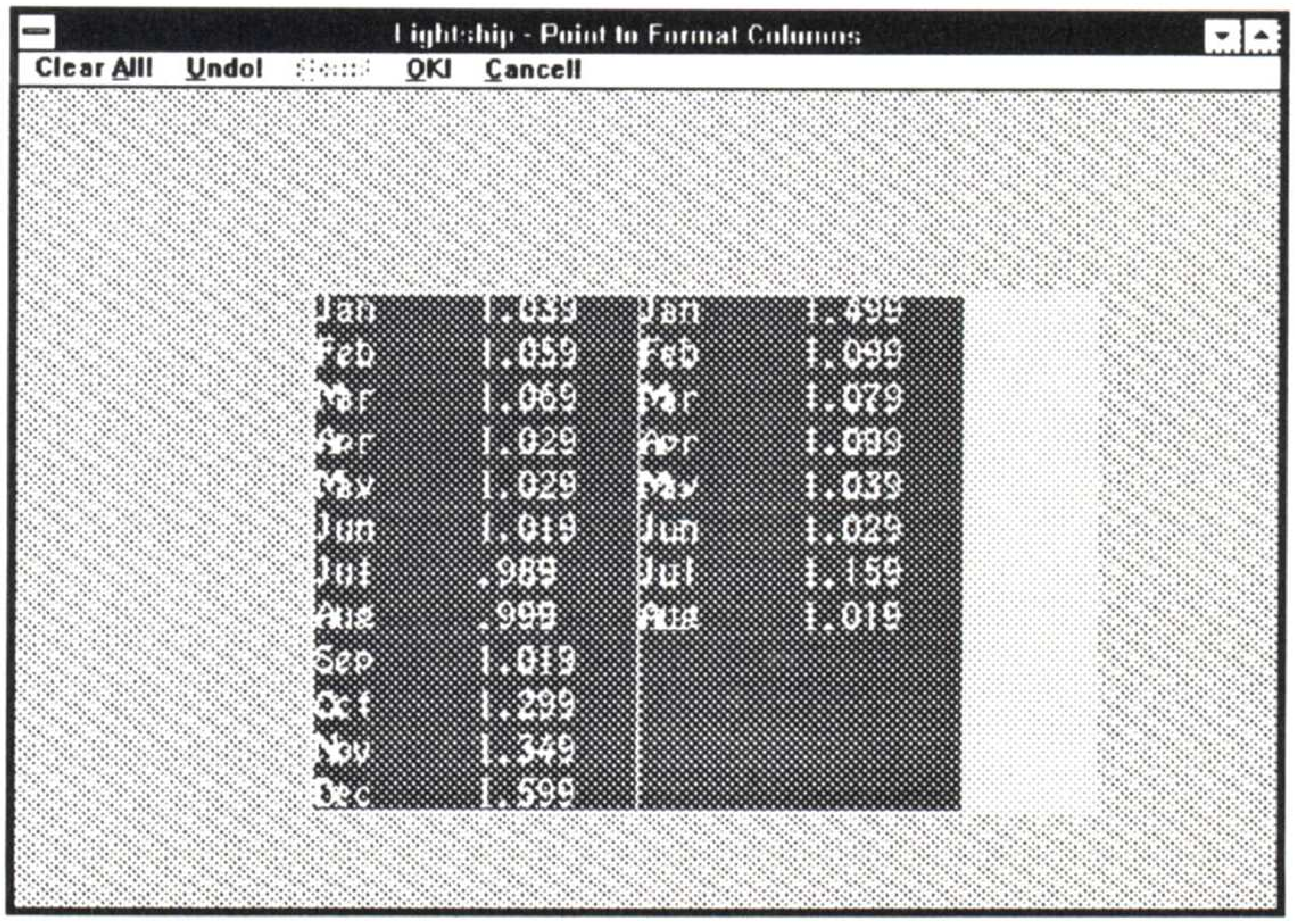
Figure 4-23 Defining Variance Colors

- **To switch the colors of the low and high values:**

Choose the Swap button.

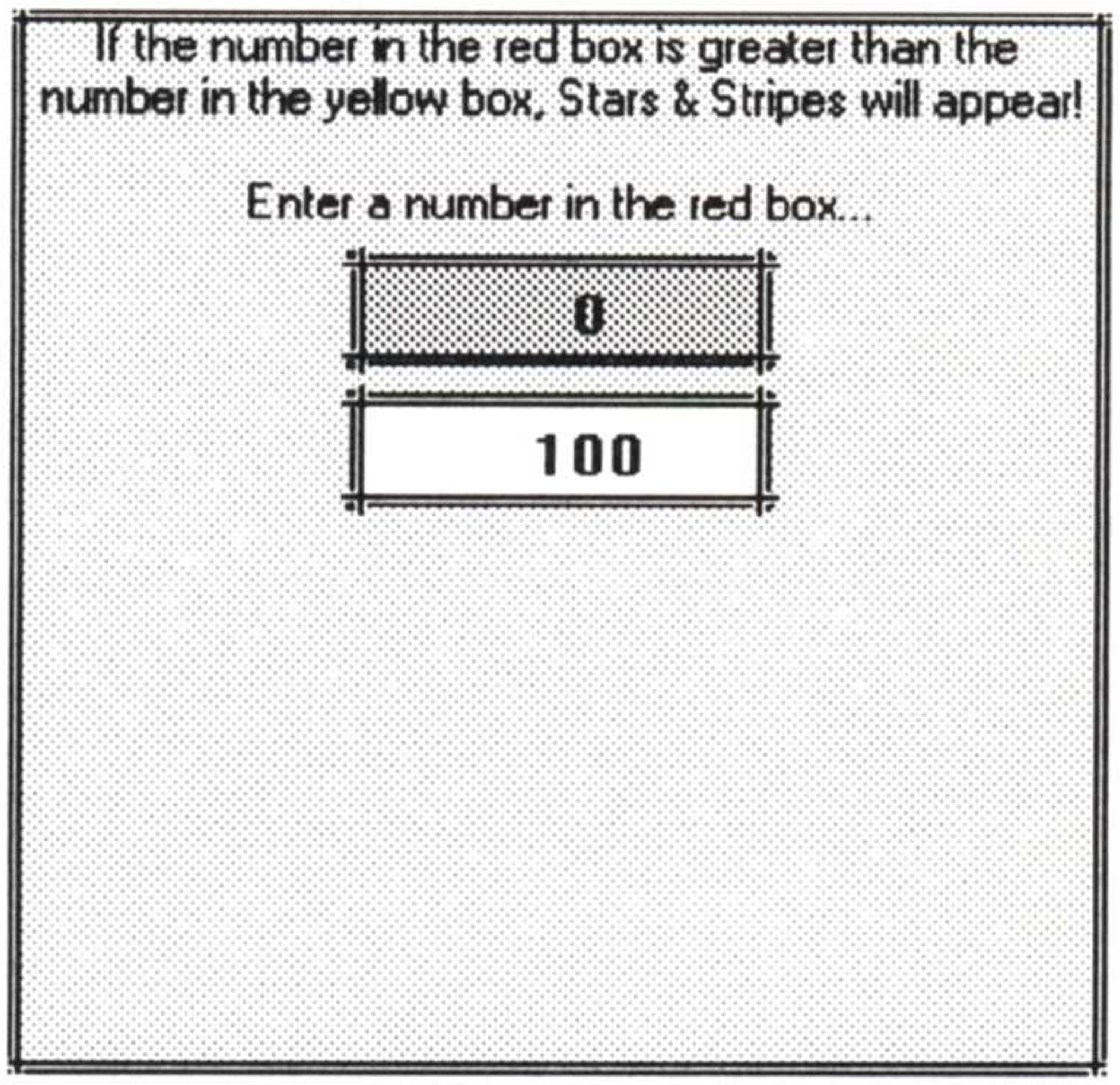
Example

This example shows how we defined the variances shown in Figure 4-21. First we created a format object and then selected the range of numbers shown in Figure 4-24.



Jan	1.039	Jan	1.499
Feb	1.059	Feb	1.099
Mar	1.069	Mar	1.079
Apr	1.029	Apr	1.099
May	1.029	May	1.039
Jun	1.019	Jun	1.029
Jul	.989	Jul	1.159
Aug	.999	Aug	1.019
Sep	1.019		
Oct	1.299		
Nov	1.349		
Dec	1.599		

Figure 4-24 The Data Range to be Formatted



If the number in the red box is greater than the number in the yellow box, Stars & Stripes will appear!

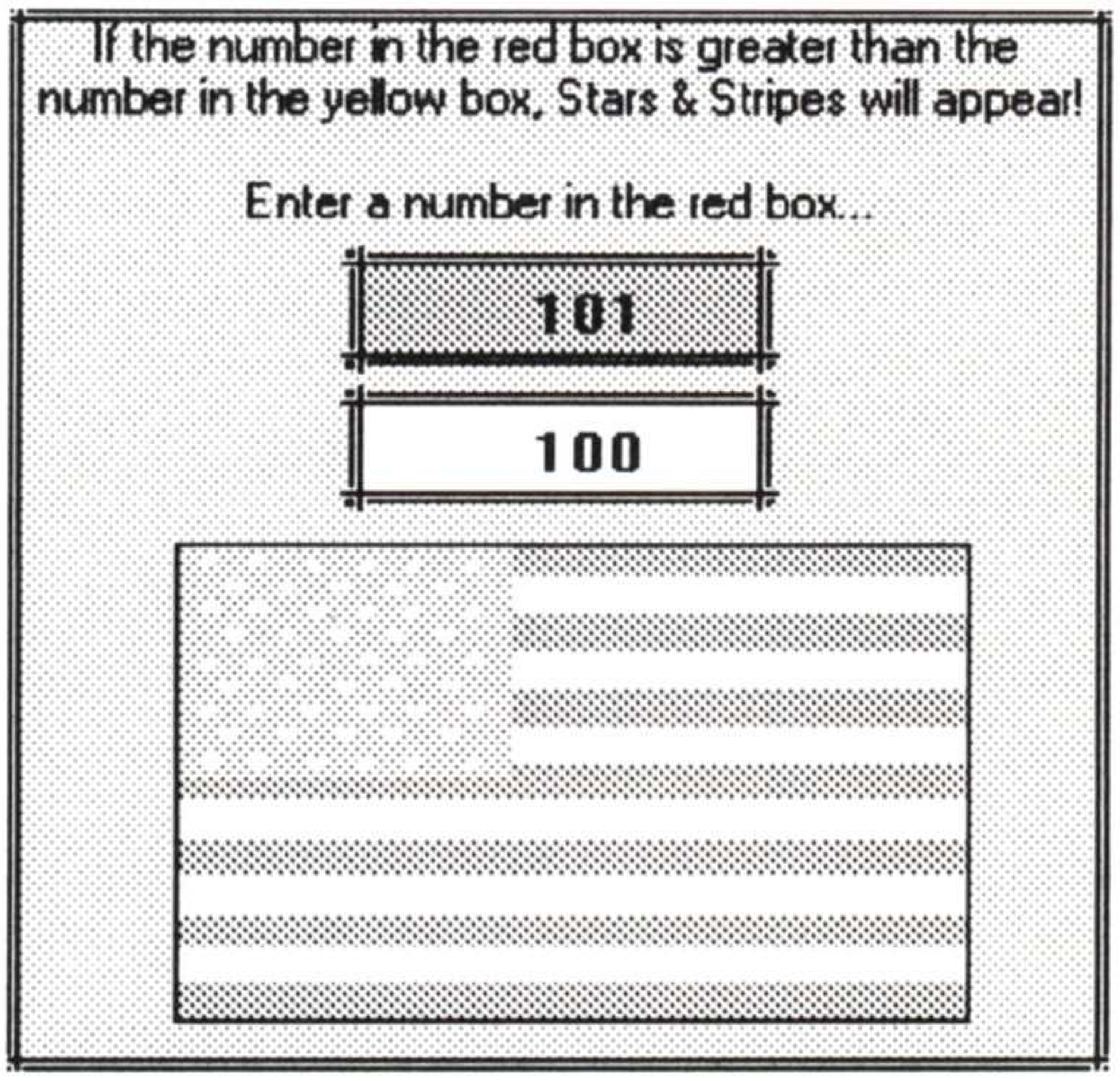
Enter a number in the red box...

0

100

Figure 4-32 Coloring the Format Object Hides the Image

If the source number is less than the high value, the format object is not colored and the object beneath it is displayed.



If the number in the red box is greater than the number in the yellow box, Stars & Stripes will appear!

Enter a number in the red box...

101

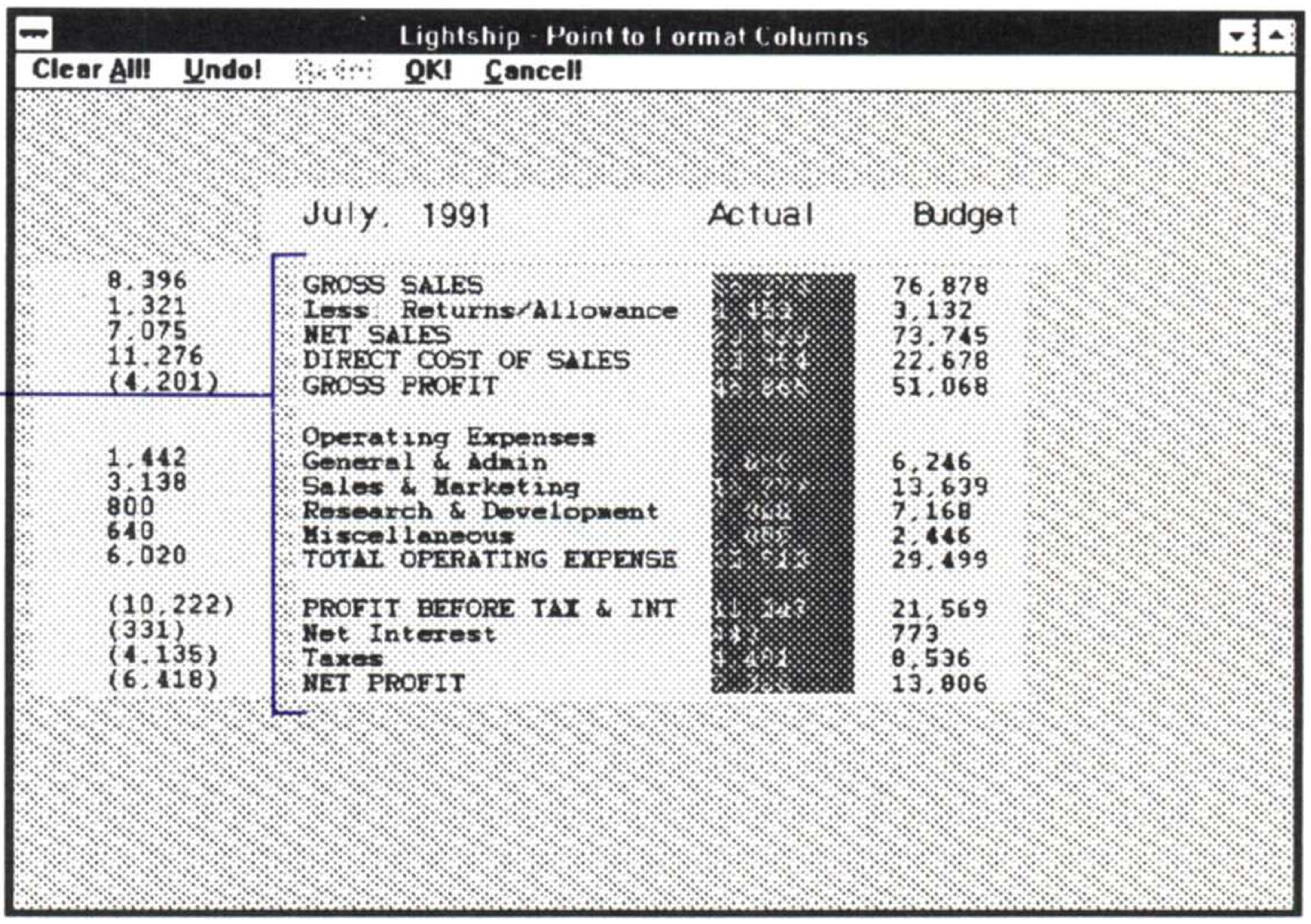
100

Figure 4-33 Displaying a Conditional Image

Example

In this example, we use a list of variance numbers in a hidden document object as the basis for coloring figures in another document object. The destination document object displays Actual and Budget figures. We want to color any Actual number whose corresponding variance number is a negative number.

We defined a format object and selected the Actual numbers as the destination.



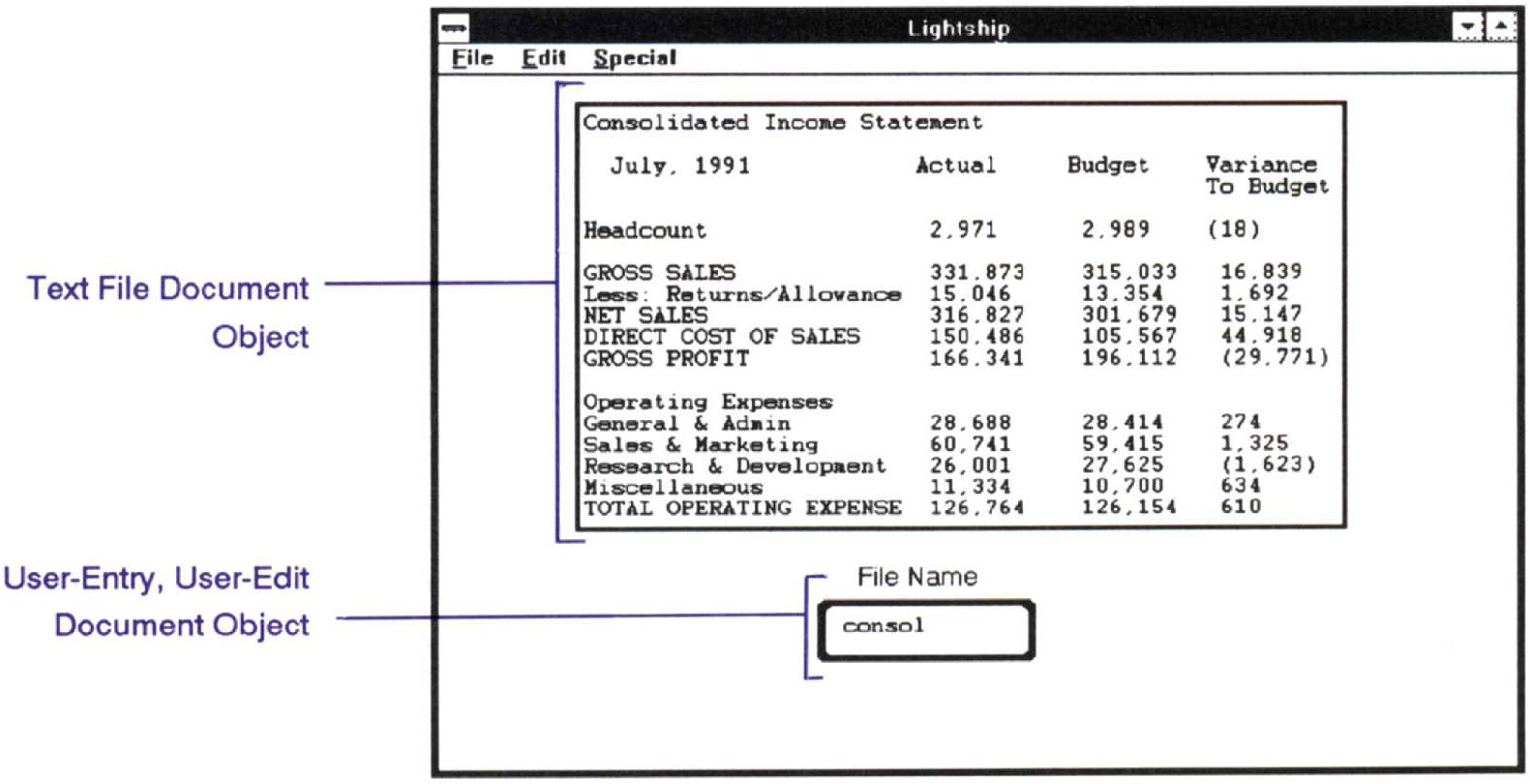
	July, 1991	Actual	Budget
8,396	GROSS SALES	[illegible]	76,878
1,321	Less Returns/Allowance	[illegible]	3,132
7,075	NET SALES	[illegible]	73,745
11,276	DIRECT COST OF SALES	[illegible]	22,678
(4,201)	GROSS PROFIT	[illegible]	51,068
	Operating Expenses		
1,442	General & Admin	[illegible]	6,246
3,138	Sales & Marketing	[illegible]	13,639
800	Research & Development	[illegible]	7,168
640	Miscellaneous	[illegible]	2,446
6,020	TOTAL OPERATING EXPENSE	[illegible]	29,499
(10,222)	PROFIT BEFORE TAX & INT	[illegible]	21,569
(331)	Net Interest	[illegible]	773
(4,135)	Taxes	[illegible]	8,536
(6,418)	NET PROFIT	[illegible]	13,806

Destination Document

Figure 4-26 Selecting Destination Numbers

Then we chose Format Color, entered a ".50" in the Low Value text box, and chose the Source button. Then we selected the variance numbers as the source.

4. Define @(file).txt as the source text file for the other document.


Lightship
File
Edit
Special
Text File Document Object
User-Entry, User-Edit Document Object

```
Consolidated Income Statement

  July, 1991                  Actual     Budget     Variance
                                                    To Budget

Headcount                     2,971      2,989      (18)

GROSS SALES                   331,873    315,033    16,839
Less: Returns/Allowance       15,046     13,354     1,692
NET SALES                     316,827    301,679    15,147
DIRECT COST OF SALES          150,486    105,567    44,918
GROSS PROFIT                  166,341    196,112    (29,771)

Operating Expenses
General & Admin               28,688     28,414     274
Sales & Marketing             60,741     59,415     1,325
Research & Development        26,001     27,625     (1,623)
Miscellaneous                 11,334     10,700     634
TOTAL OPERATING EXPENSE       126,764    126,154    610
```

File Name

consol

Figure 4-10 An Interactive Document

5. At the Browse level, click in the user-edit document and type a filename.

   The file appears in the document object that has @(file).txt defined as its source.

Editing a User-Entry Document

■ **To edit text in a user-entry document:**

1. Select the document object.
2 Choose Document Source, press F2, or double-click on the document object.
3. Choose User Entry.

   The document appears with the data in it highlighted.

Selecting Data for the Source

■ **To select data in a separate source document object:**

1. Select the format object.
2. Choose Format Color or press F5.
3. Enter the conditions and colors.
4. Choose the Source button.

   The screen changes to Point mode. By default, the destination document and the source document are the same.
5. Choose Clear All! on the menu bar to deselect the data formatted by the destination document.
6. Select the items that you want in the source document.
7. Choose OK! on the menu bar.
8. Choose OK on the Color Format dialog box.

Coloring a Format Object

By default, format objects do not display at the Browse level. However, you can color a format object if the condition defined in the Format Colors dialog box is true. When the destination (or source) data is less than or equal to the low value, or greater than or equal to the high value, the format object is colored.

You might use this option when you want to hide or display a message or button that is underneath the format object. For example, you could display an image object on the screen as shown in Figure 4-29.

Defining the Layout

You can define a document object so that it is has columns or the text wraps to fill the document. The default layout for document objects is columns. You can change this on the Document Layout menu. The following options are designed for the display of text rather than columns:

- No Columns
- Word Wrap
- Fill

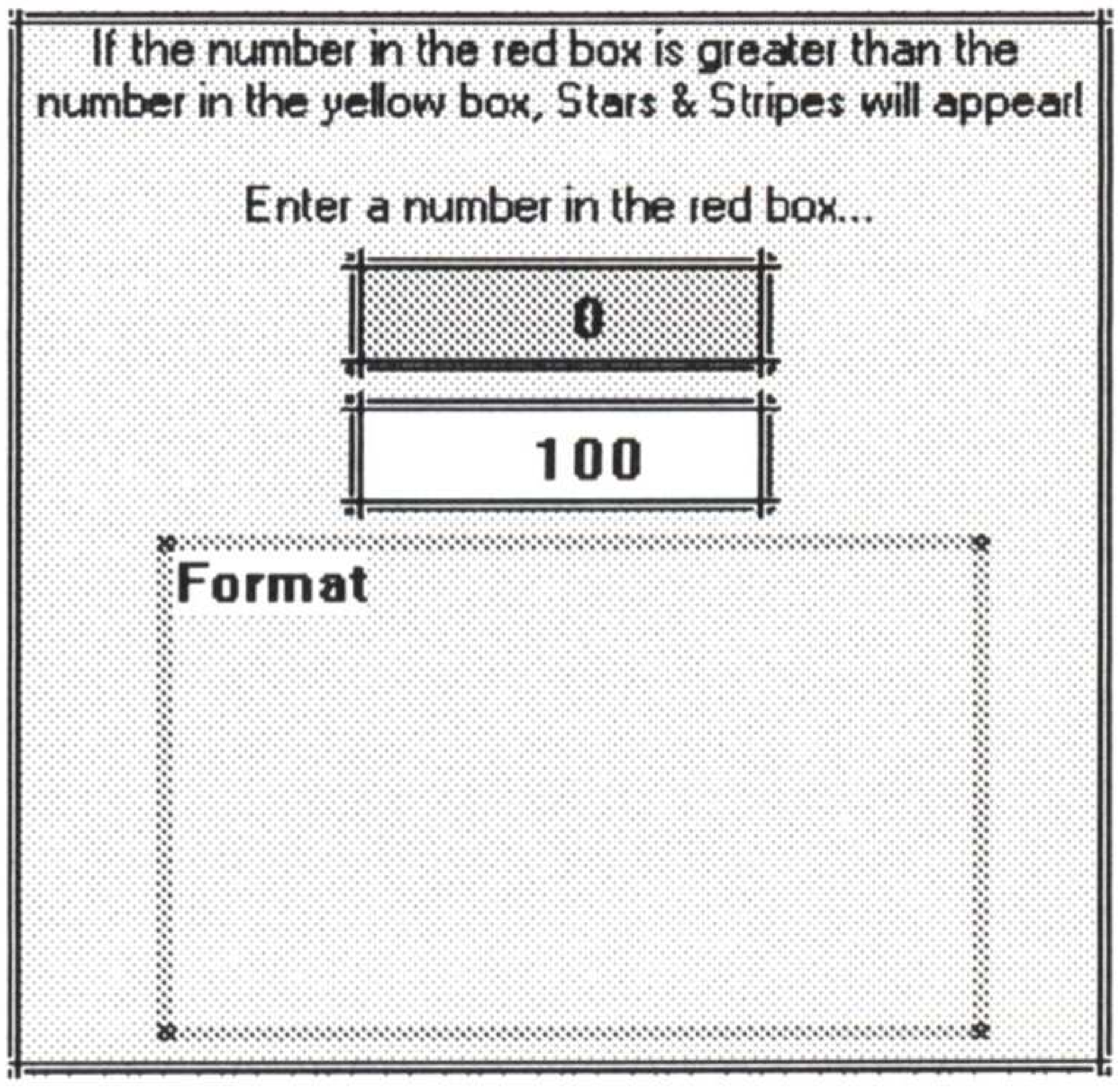
Proportional fonts use proportional spacing on document objects with Document Layout No Columns on. Document objects laid out with columns can use proportional fonts but do not use proportional spacing.

Format objects do not affect document objects affected by No Columns, Word Wrap, and Fill.

Defining the Layout

■ **To define the layout:**

1. Select the document object.
2. Choose Document Layout.
3. Choose No Columns, Word Wrap, or Fill.
    - Choose No Columns for the data to appear the same as in the source document.
    - Choose Word Wrap for data to wrap to the next line depending on the size of the document object and on line feeds and carriage returns in the source document. A line feed followed by a carriage return in the source document ends a line. Two carriage returns create a new paragraph.



If the number in the red box is greater than the number in the yellow box, Stars & Stripes will appear!

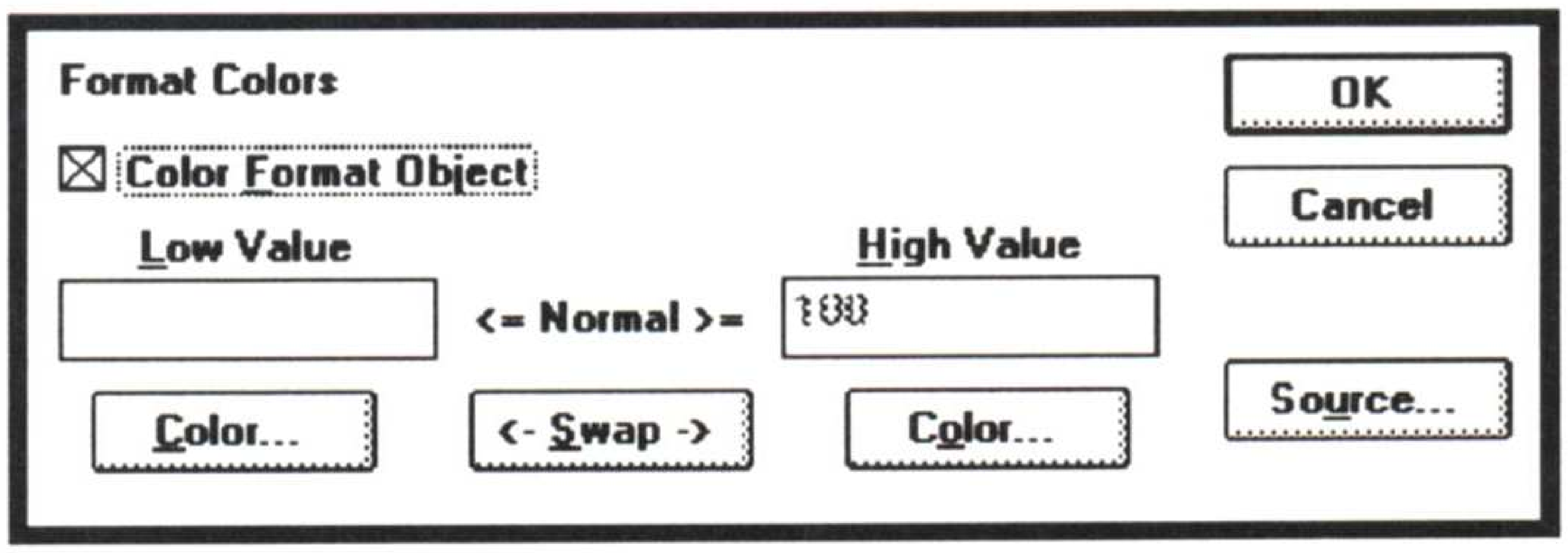
Enter a number in the red box...

0

100

Figure 4-30 Creating a Format Object

Then you would choose Format Colors, define the conditions, and turn on Color Format Object. You would choose the color to match the color of the screen background. In Figure 4-30, the document object displaying "100" is the source of the format object. We entered the high value as "100."



Format Colors

☒ Color Format Object

Low Value:

High Value: 100

Figure 4-31 Specifying Format Colors

LightShip checks the first number in the source document. If the number is greater than or equal to the high value, the format object becomes the text color defined for the high value. This hides the image.

To specify a column delimiter:

1. Choose Document Column Delimiter.
2. Choose the delimiter that marks the division between columns.
    - Choose *None* when you do not want to define columns. This is the default when the source is a text file.
    - Choose *Tab* if tab characters are used as column delimiters in the document. LightShip creates a new column for each tab character in the document. This is the default when the source is a DDE Request or user entry.
    - Choose *Comma* if commas are used as column delimiters in the document. LightShip creates a new column for each comma in the document.
    - Choose *One Space* if there are one or more consecutive spaces between columns in the document, but not within a column. LightShip creates a new column for each space in the document.
    - Choose *Two Spaces* if there are two or more consecutive spaces between columns in the document, but not within a column. LightShip creates a new column whenever it encounters two or more spaces in the document.
    - Choose *Use Column Width* to set each column to the number of characters you specify in the Document Column Width text box. This option is useful when data has a fixed column width and no delimiter character. This option only changes the way a document appears on the screen when you format it with a format object.

Displaying Special Values

Many applications use a particular string, such as NA, to denote a "not available" value in a data field. If you expect such values in your source data, you can specify the input strings you expect and how to display them on the screen. You do this by defining two settings in the Preferences dialog box:

- NA stores incoming values.
- OUTNA stores one output value.

Document objects must be formatted to display the OUTNA value that you specify.

NA settings are global. They are saved in LS.INI if you save the settings in the Preferences dialog box.

Incoming Values

You can define as many incoming values as you want; however, an NA input string cannot begin with a digit, a minus sign, an open parenthesis, a closed parenthesis, or a period. LightShip does this to prevent an actual number from being interpreted as not being available.

Specifying Special Values

■ **To specify how special values will appear:**

1. Choose View Preferences.

   The dialog box shown in Figure 4- 34 appears.

2. Click in the NA - Incoming Values text box and type the incoming values you expect, separated by a semicolon. For example:

   `****;na`

Hiding a Document Object

You can prevent a document object from displaying with the Document Hidden command. Use hidden documents to point to intermediate data that you do not want to display; for example, chart data, variable values, or function arguments.

■ **To hide a document:**

1. Select the document.
2. Choose Document Hidden.

■ **To display a hidden document without changing its hidden attribute:**

Choose View Show Hidden Objects.

or

Choose View Outline All Objects.

■ **To turn off a document object's hidden attribute:**

1. Select the document.
2. Turn off Document Hidden.

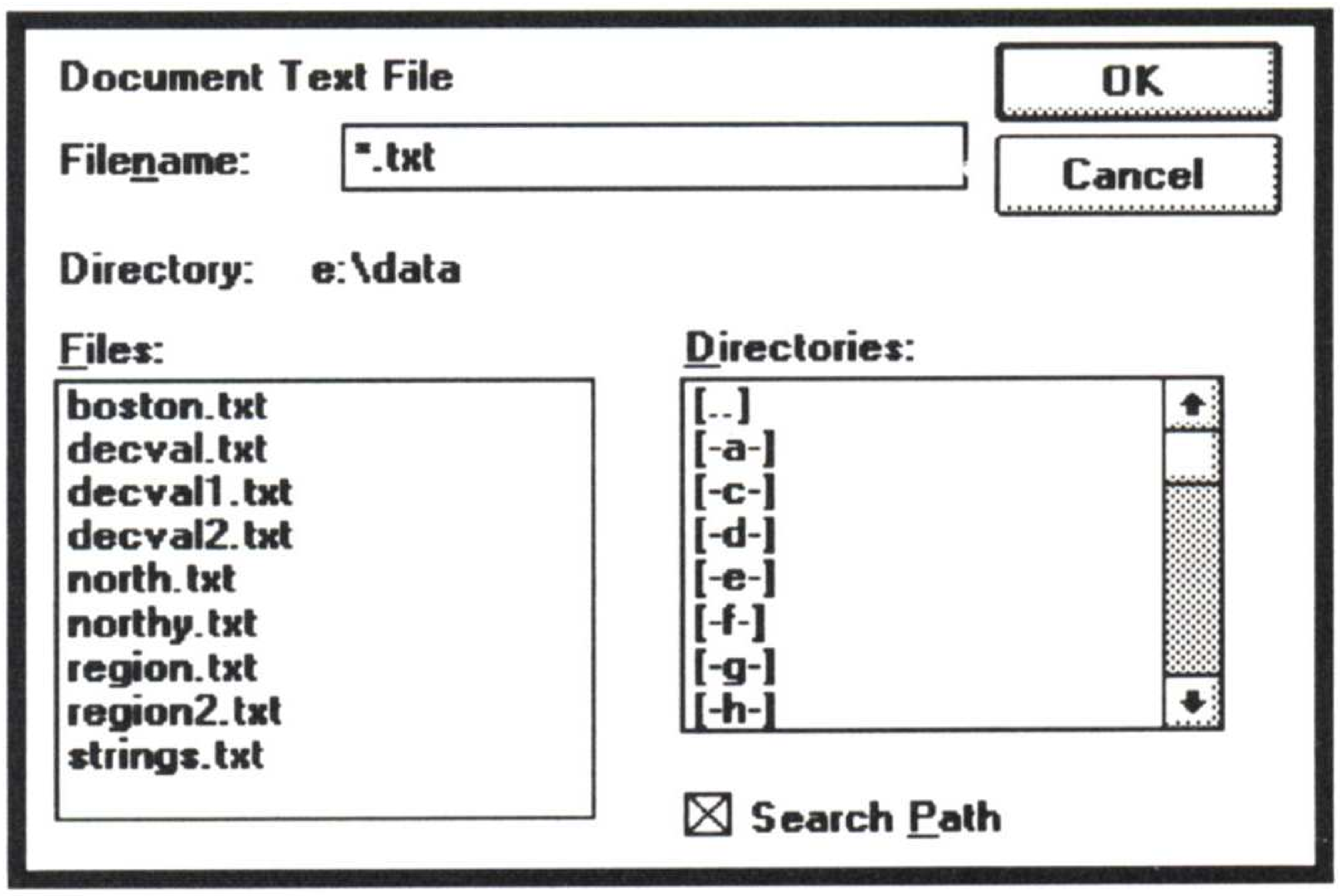
Scrolling a Document Object

When you select a document object at the Author level, scroll bars appear on the LightShip window if the data in a document object extends beyond the document object window. You can use the scroll bars, the DIRECTION keys, or PAGE keys to scroll.

1. Enter the filename.

   Select a filename from the list of files, type the filename, or type an asterisk (*) to list a subset of files in the Files list box. For example, to list only files that end in ".TXT," type:

   `*.txt` and press ENTER.



Document Text File

Filename: *.txt

Directory: e:\data

Files:
boston.txt
decval.txt
decval1.txt
decval2.txt
north.txt
northy.txt
region.txt
region2.txt
strings.txt

Directories:
[..]
[-a-]
[-c-]
[-d-]
[-e-]
[-f-]
[-g-]
[-h-]

☒ Search Path

Figure 4-3 Selecting a Text File to Display

2. Turn on Search Path if you want LightShip to search through the current working directory first and then in a search path that you define. (For more information about how to define a search path, see *Chapter 2: Applications, Screens, and Files*.) Otherwise, if you want LightShip to search for the file only in the directory specified on the dialog box, turn Search Path off.

3. Choose OK.

   The file appears in the document object. The columns may not be aligned or spaced correctly. For information about formatting a document, see "Defining the Layout" and "Formatting a Document Object."

2. Choose Document Vertical Scroll or Document Horizontal Scroll.

   You can add both or just one.

Adding Local Scroll Bars

When you add local scroll bars to a document object, the scroll bars on the application window disappear unless there are other scrollable document objects on the screen.

You must turn on either Horizontal or Vertical Scroll to enable the Local Scroll Bars option.

You cannot use Scroll By Page on document objects with local scroll bars. Also, Hide Scroll Bars does not hide local scroll bars.

You can scroll document objects with local scroll bars using a *Scroll All Documents to Top* action, but not using *Scroll Up*, *Scroll Down*, or *Scroll to Top* actions.

Adding Local Scroll Bars

■ **To add local scroll bars:**

1. Turn on Horizontal or Vertical Scroll, or both.
2. Choose Document Local Scroll.

have an *application name*, a *topic* (basic data grouping), and an *item* (specific data within the topic) defined. For the exact syntax, refer to the documentation of the application from which you are requesting data. For a more complete description of DDE and examples, see *Chapter 12: Using Dynamic Data Exchange*.

Defining a DDE Request

■ To define a DDE Request:

1. Type in the server application name, topic, and item. The application name is limited to 32 characters. The topic and item cannot exceed 255 characters each.

   or

   - Switch to the server application and copy the data to the Clipboard. The application must support the Link format. If there is data in the Clipboard in the Link format, the Paste Link button is enabled; otherwise, it is dimmed.
   - Switch back to LightShip.
   - Choose the Paste Link button and LightShip fills out the application, topic, and item for you.

2. Turn on Auto Start Program to start the server application when the DDE Data Request is issued, if it is not already running.

3. Type the command to start the server application.

   Fully specify the pathname of the server application if it is not defined by the DOS Path command. You might want to define a global variable in LS.INI to specify a pathname for the application.

   Fully specify the pathname of the file if it is not defined by the DOS Path command or if you do not specify its path in the Startup Directory text box.

Scroll By Page only affects document objects that use the application window scroll bars; it does not affect documents with local scroll bars.

- **To turn on Scroll By Page:**

  Choose Options Scroll By Page.

Anchoring Data to the Document Object

You can anchor lines of text to the top and bottom of the document object to prevent scrolling beyond a particular point. You set a point at the top-left or bottom-right corners of the document object. As long as the setting is on, you cannot move beyond the point you set. These settings affect both the Author and Browse levels.

- **To anchor the first line of data to the top-left of the document:**

1. Select the document object.
2. Scroll it until the appropriate lines of data are at the top of the document object.
3. Choose Document Top-left Corner.

- **To reset the Top-left Corner:**

  Turn it off and on again.

- **To anchor the last line of data to the bottom-left of the document object:**

1. Scroll the document down to the last line of data you want to display.
2. Choose Document Bottom-right Corner.

Creating a User-Entry Document Object

At the Author level, you can use hidden user-entry document objects to create customized lists for selecting data in Point mode, such as lists of values to assign to variables or chart labels. At the Browse level, you can use user-entry document objects as interactive text boxes or to display user selections.

You can type numbers, strings, variable references, for example, *@(item)*, in a user-entry document, or you can leave it blank. If you type a variable reference, the value appears at both the Author and Browse levels. You can type multiple variable references if you only want to display, but not update, the values. For information on how to create a document object that you can type into at the Browse level, see "Creating an Interactive Document."

Entering Data

When you choose Document Source User Entry, the cursor becomes a flashing vertical bar in the document object.

■ **To enter data in a user-entry document object:**

1. Type the data.

   You can use all the edit keys you normally use when you enter text in a text box. For more information on edit keys, see *Chapter 1: Getting Started*.

   - Press CTRL+ENTER to start a new line of text. Do not press ENTER until you have completed typing everything you want to enter.

     If you type more lines than can show in the document object at once, the list scrolls down automatically as you type.

   - Press the UP ARROW, DOWN ARROW, or PAGE keys to scroll through the text.

Choosing a Font

The term *font* describes a specific set of characters in a particular typeface design, for example, Helvetica. Font size refers to the height of the characters and is usually measured in points, for example, 10 point type. Font styles refer to the way a font looks, for example, normal, bold, underline, italic.

When you installed Windows, the Setup program installed certain fonts automatically based on your choice of graphics adapter and printer(s). For information on how to remove or add fonts, refer to the *Microsoft Windows User's Guide*.

You can change the font of a document object, but you can only assign one font for each object. If you want different fonts for column headers, for example, create separate document objects.

Choosing a Font

■ **To choose a font:**

1. Select the document object.
2. Choose Document Font or press F6.

   The dialog box shown in Figure 4-15 appears. The fonts installed in Windows are listed in the Text Font dialog box.

   ■ **To list only monospaced screen fonts:**

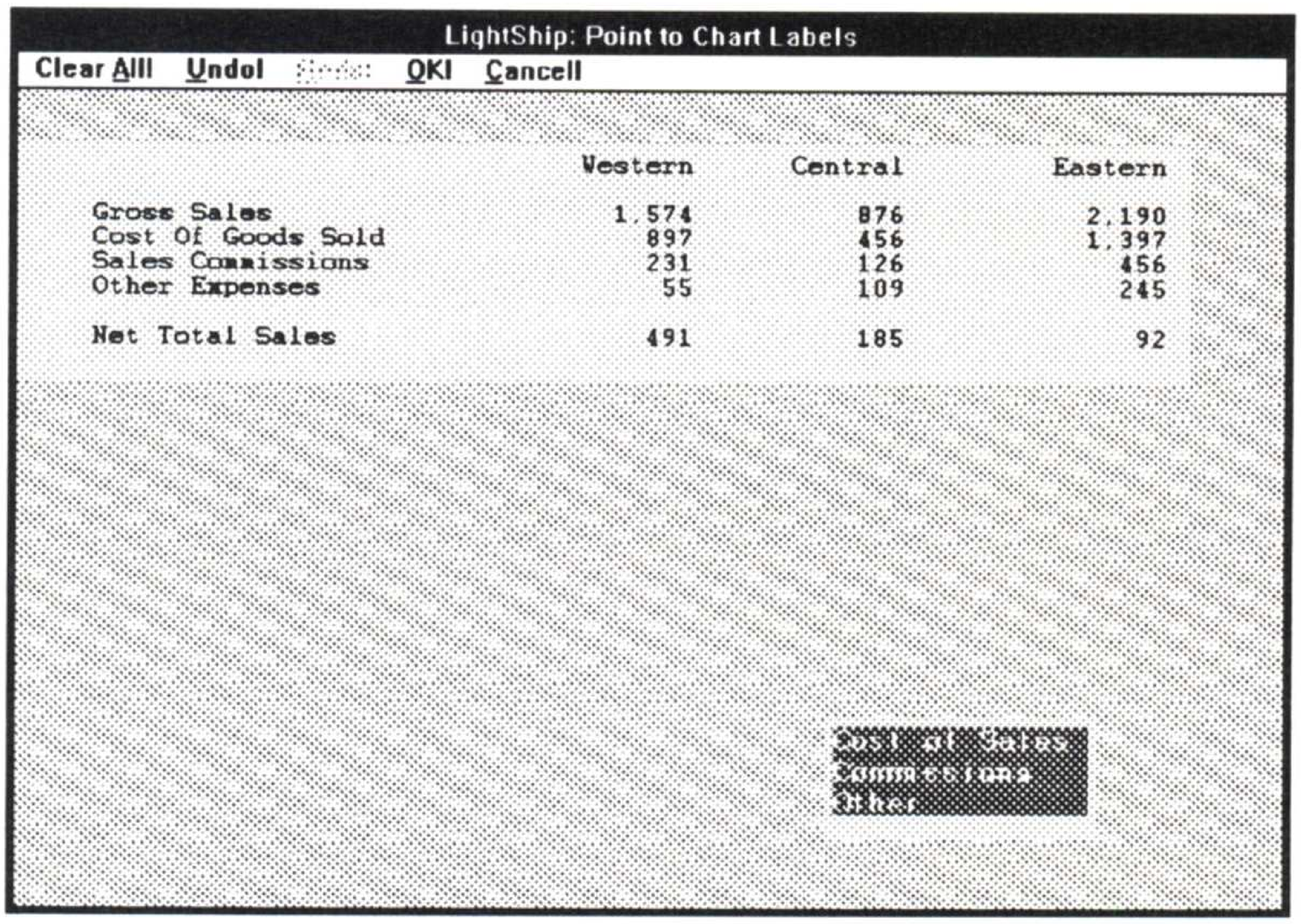
   Turn on the Fixed Pitch check box.

   For document objects laid out with columns, we recommend leaving the Fixed Pitch check box on because sometimes characters in proportional type overlap and do not display properly.

To create a customized list:

1. Create a document object and select User Entry as the source.
2. Type a list of numbers or strings.
3. Go to Point mode and select the list.

   For the example shown, you would select the chart and then choose Chart Labels to get to Point mode.



	Western	Central	Eastern
Gross Sales	1,574	876	2,190
Cost Of Goods Sold	897	456	1,397
Sales Commissions	231	126	456
Other Expenses	55	109	245
Net Total Sales	491	185	92

Cost of Sales
Commissions
Other

Figure 4-8 Selecting from a List in Point Mode

4. Select the values you want and choose OK!. The labels are displayed on the chart.

5. Select the style(s) you want.
6. Choose OK.

Formatting a Document Object

To format numbers and text in a document object, you must first create a format object. You use format objects to:

- Justify text and numbers
- Format numbers (for example, $1,000.00)
- Define and color variances in the data

What is a Format Object?

A format object defines a set of attributes that you can apply to numbers or text in document objects. For example, a format object could format numbers to be left-aligned, with dollar signs, and two decimal places. Format objects only affect document objects with Document Layout Columns on.

You select the data to format in Point mode. When None is on in the Document Column Delimiter menu, LightShip interprets each row as being one wide column. When you select data in Point mode, it highlights one character at a time. Remember to select extra spaces to allow for prefixes and suffixes in the formatted data.

The data you select is formatted according to the settings on the Format menu. If you see asterisks (****) in the document object, it means that there is not enough space to display the data as it is formatted. Try increasing the selection range in Point mode and changing the settings on the Numeric Format dialog box; for example, reduce the number of decimal digits or erase a prefix or suffix symbol.

To create an interactive document:

1. Create a document object and select User Entry as the source.
2. Type one simple variable reference (for example, *@(item)*).
3. Turn on Document User Edit.
4. (Optional) Turn on Document Numeric Required, to restrict data entry to numbers.

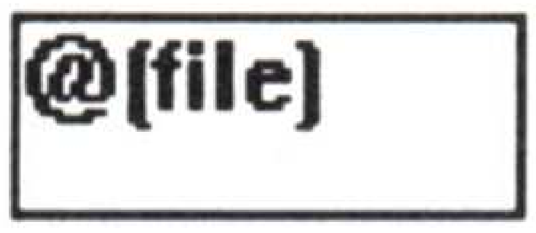
   If you choose this option, your application displays an error message if you type in non-numeric data.
5. (Optional) Specify the layout using the Document Layout menu.

   This allows you to control how data in the document appears; for example, Word Wrap is an option. For more information, see "Defining the Layout."

Example

For example, Figure 4-10 shows a screen with two document objects, a user-edit document object and a document object that displays a text file. When you type a filename into the user-edit document, that file displays in the other document object.

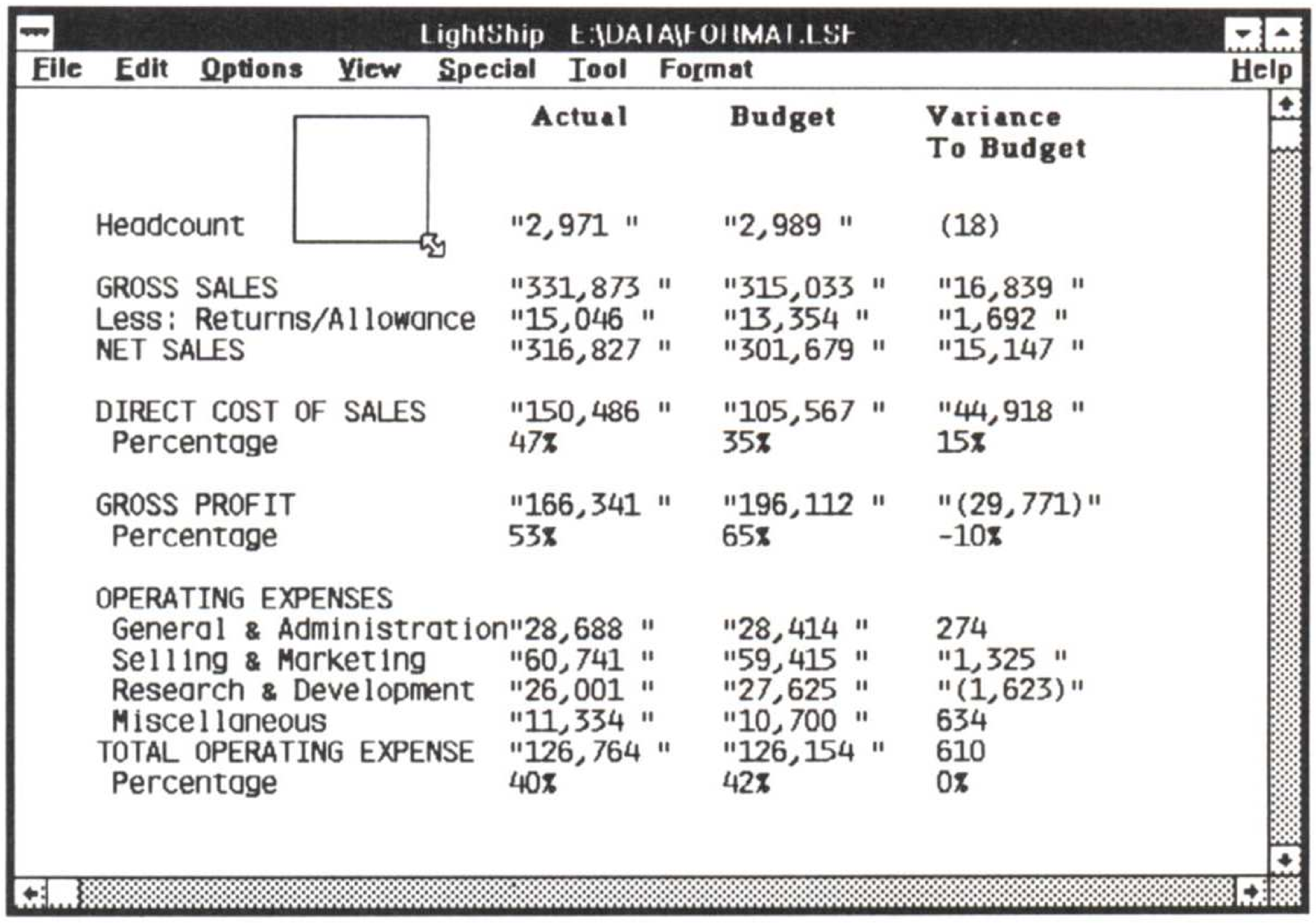
1. Use Special Variables to define a variable called *file*.
2. Create a user-entry document at the Author level and type a variable reference in it as shown:



@[file]

3. Choose Document User Edit.

3. Drag or click the mouse to create the format object, as shown in Figure 4-16.

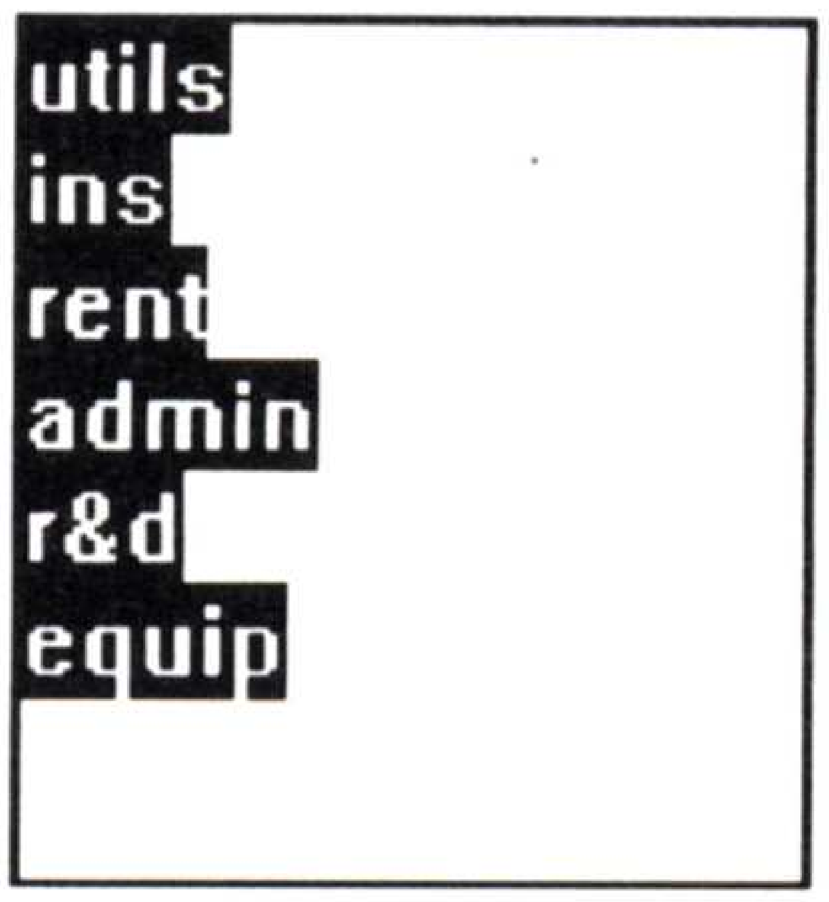


```
                                 Actual      Budget      Variance
                                                         To Budget

Headcount                        "2,971 "    "2,989 "     (18)

GROSS SALES                      "331,873 "  "315,033 "  "16,839 "
Less: Returns/Allowance          "15,046 "   "13,354 "   "1,692 "
NET SALES                        "316,827 "  "301,679 "  "15,147 "

DIRECT COST OF SALES             "150,486 "  "105,567 "  "44,918 "
 Percentage                      47%         35%         15%

GROSS PROFIT                     "166,341 "  "196,112 "  "(29,771)"
 Percentage                      53%         65%         -10%

OPERATING EXPENSES
 General & Administration"28,688 "           "28,414 "   274
 Selling & Marketing             "60,741 "   "59,415 "   "1,325 "
 Research & Development          "26,001 "   "27,625 "   "(1,623)"
 Miscellaneous                   "11,334 "   "10,700 "   634
TOTAL OPERATING EXPENSE          "126,764 "  "126,154 "  610
 Percentage                      40%         42%         0%
```

Figure 4-16 Creating a Format Object

4. Choose Format Destination.

   The screen changes to Point mode so that you can select the data you want to format (see Figure 4-17).



utils
ins
rent
admin
r&d
equip

Figure 4-11 Editing User-Entry Data

4. Click on the point at which you want to start typing.

   The cursor changes to a flashing vertical bar. If you press a key without clicking in the document first, it deletes all highlighted text. To bring it back (before you do anything else), press the ESC key, then start again.

5. Type into the document.

6. When you are finished typing, press ENTER.

Changing the Data Source

■ **To change the data source of a document object:**

1. Select the document object.

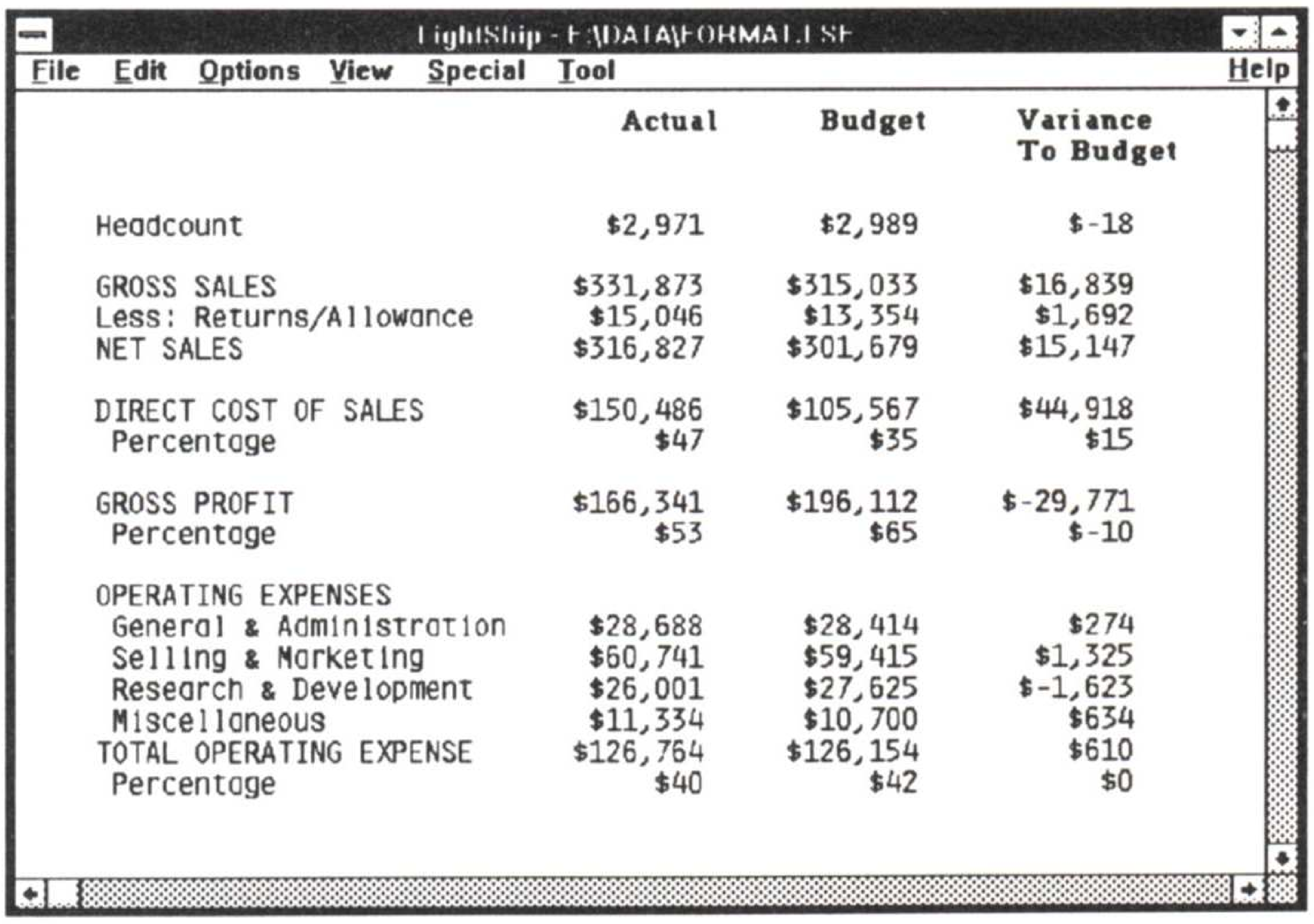
2. Choose Document Source, press F2, or double-click on the document object.

   The Document Source menu appears (see Figure 4-2).

3. For more information, see the section for the appropriate document source in "Creating Document Objects."

Hint If you are formatting a document object that is going to scroll, scrolling will be faster if you select an entire row or an entire column to format.

2. When you are finished, choose OK! on the menu bar.



	Actual	Budget	Variance To Budget
Headcount	$2,971	$2,989	$-18
GROSS SALES	$331,873	$315,033	$16,839
Less: Returns/Allowance	$15,046	$13,354	$1,692
NET SALES	$316,827	$301,679	$15,147
DIRECT COST OF SALES	$150,486	$105,567	$44,918
Percentage	$47	$35	$15
GROSS PROFIT	$166,341	$196,112	$-29,771
Percentage	$53	$65	$-10
OPERATING EXPENSES			
General & Administration	$28,688	$28,414	$274
Selling & Marketing	$60,741	$59,415	$1,325
Research & Development	$26,001	$27,625	$-1,623
Miscellaneous	$11,334	$10,700	$634
TOTAL OPERATING EXPENSE	$126,764	$126,154	$610
Percentage	$40	$42	$0

Figure 4-19 A Formatted Document Object

Formatting Numbers

To format numbers:

1 Choose View Show Hidden Objects.

2. Select the format object.

3. Choose Format Numeric Format, press F2, or double-click on the format object.

A dialog box appears.

- Choose Fill for data to wrap to the next line depending on the size of the document object. Fill ignores line feeds and carriage returns in the source document object. Two carriage returns create a new paragraph.

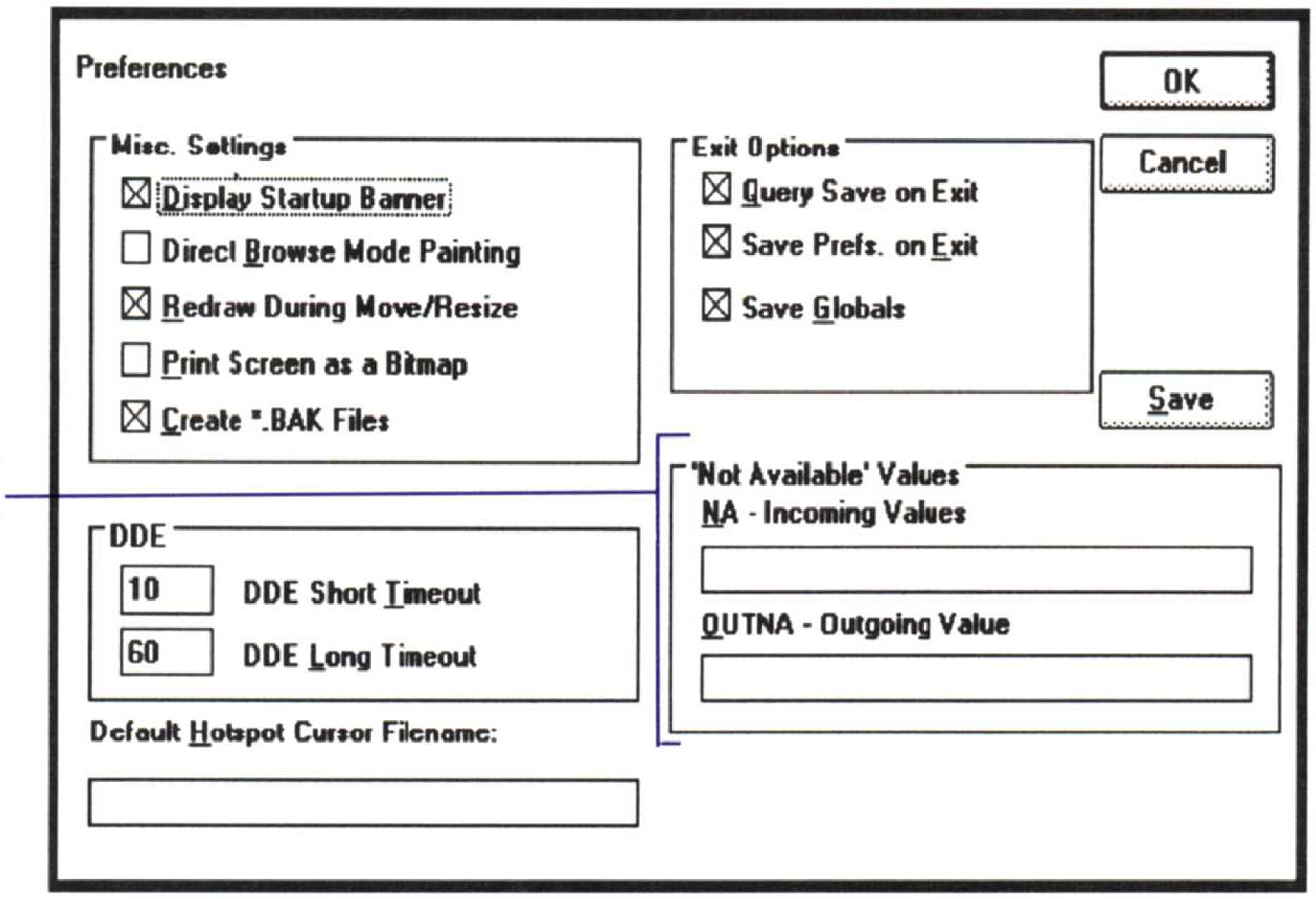
Defining Columns

When you first display columns of data in a document object, the columns may not be spaced or aligned correctly. You can specify the column width(s) and the character(s) that mark the division between columns (called the *column delimiter*). LightShip uses characters in the source data to delimit columns. For example, most DDE data uses tab characters to mark the column divisions. You can specify tab characters, commas, or spaces as column delimiters. LightShip creates a new column whenever it encounters the delimiter character.

The column delimiter and widths that you specify affect the way data appears in the document object. They also affect the width of the selection range (the area that highlights) when you select data in Point mode. For more information about Point mode, see *Chapter 3: Objects, Tools, and Modes*.

Specifying Column Delimiters

The way you specify columns in a document object affects how you select data in Point mode. When you specify a column delimiter other than None, data in Point mode is highlighted by column; the widths of the selection ranges are defined by the numbers that you enter in the Document Column Width dialog box. When you specify no delimiter (None), it does not change the way the data appears on the screen; it only affects Point mode, where data highlights one character at a time. When None is on, LightShip assumes each row is one wide column (or one cell) and you cannot enter column widths in the Document Column Width dialog box.



Define Special Values Here

Preferences

Misc. Settings

☒ Display Startup Banner

☐ Direct Browse Mode Painting

☒ Redraw During Move/Resize

☐ Print Screen as a Bitmap

☒ Create *.BAK Files

Exit Options

☒ Query Save on Exit

☒ Save Prefs. on Exit

☒ Save Globals

DDE

10 DDE Short Timeout

60 DDE Long Timeout

Default Hotspot Cursor Filename:

'Not Available' Values

NA - Incoming Values

OUTNA - Outgoing Value

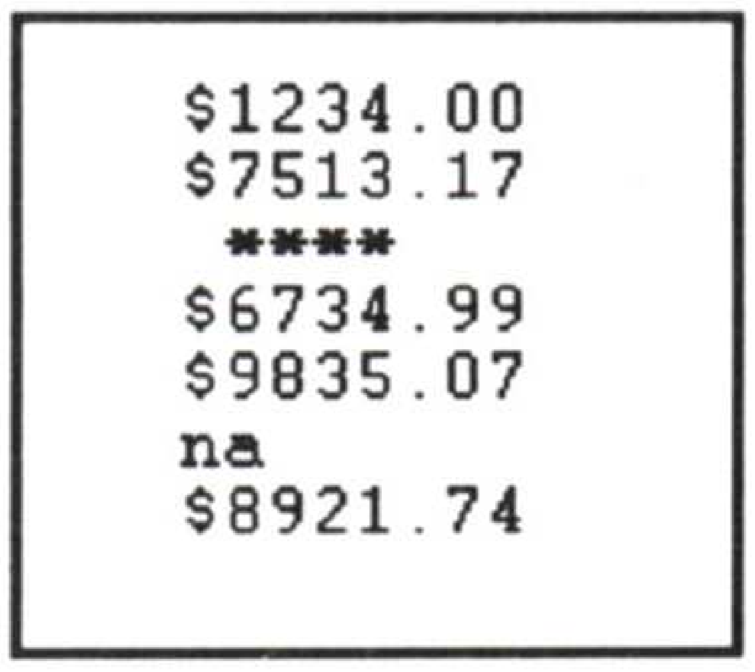
Figure 4-34 Defining Special Values

3. Click in the OUTNA text box and type the output value. You can only have one output value. For example:

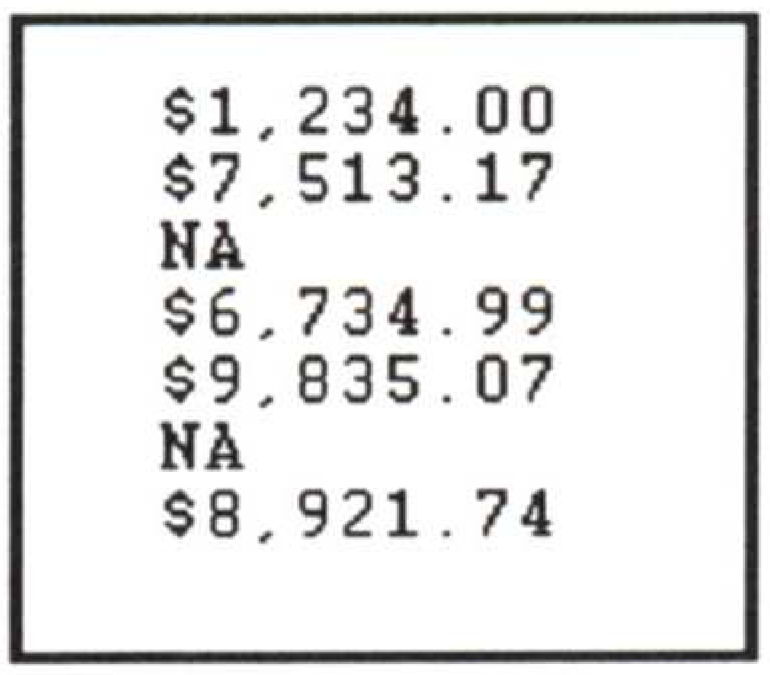
   NA

4. Choose OK.

If your document looked like the one on the left before, it displays the output values you defined, as shown:



```
$1234.00
$7513.17
 ****
$6734.99
$9835.07
na
$8921.74
```



```
$1,234.00
$7,513.17
NA
$6,734.99
$9,835.07
NA
$8,921.74
```

* * *

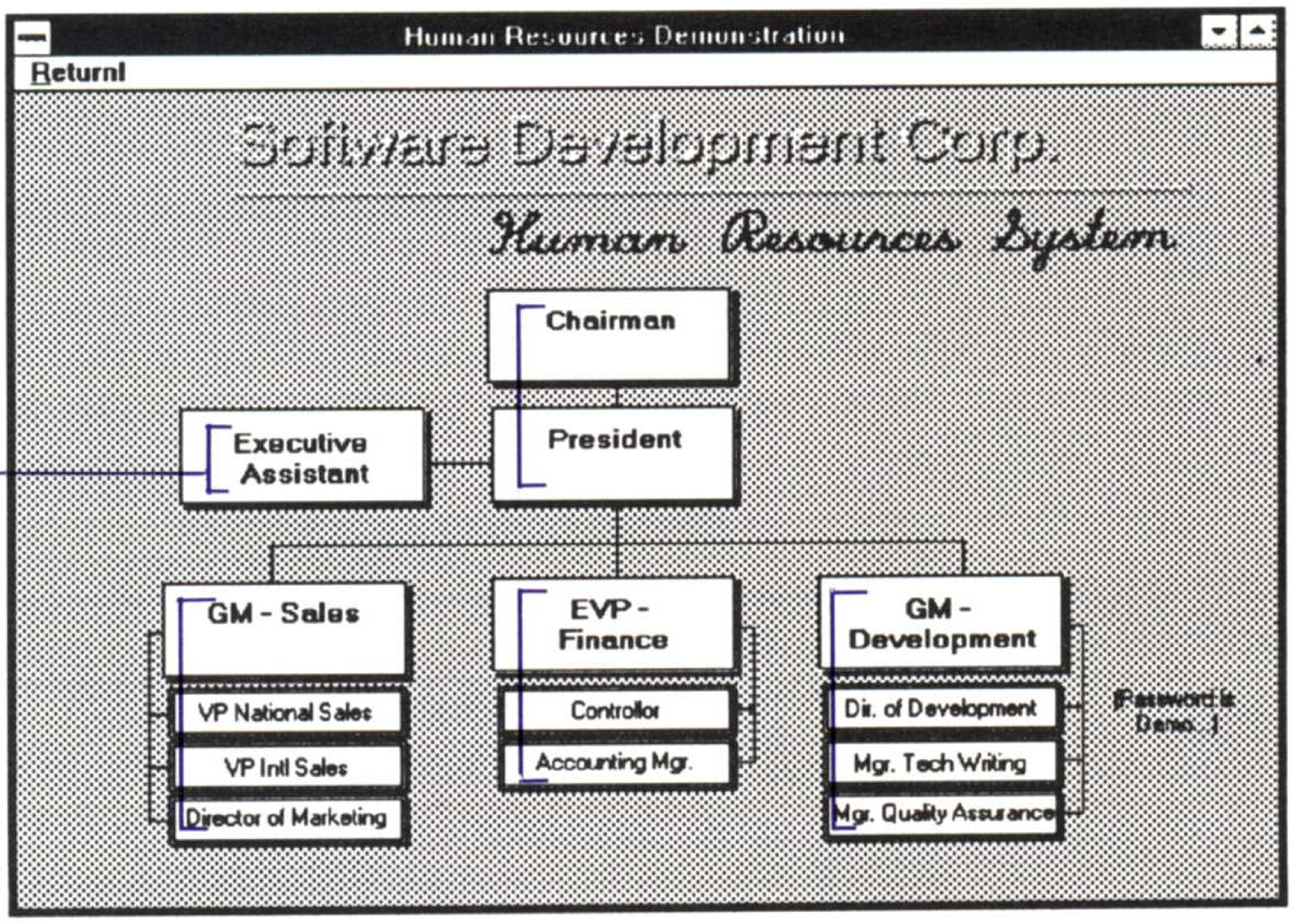
Chapter 5

Text, Draw Objects, and Images

This chapter explains how to enter text, create simple draw objects, and import images into your application.

What Is a Text Object?

You display simple text on a screen by creating a text object. Use text objects to display small amounts of text, such as titles or headers. To display larger amounts of text, use document objects. Figure 5-1 shows an organizational chart that displays employee names in text objects.



Text Objects

Figure 5-1 Text Objects

Coloring a Draw Object

To change the color of a draw object:

1. Select the object.
2. Choose Draw Color or press F5.

   A dialog box appears.

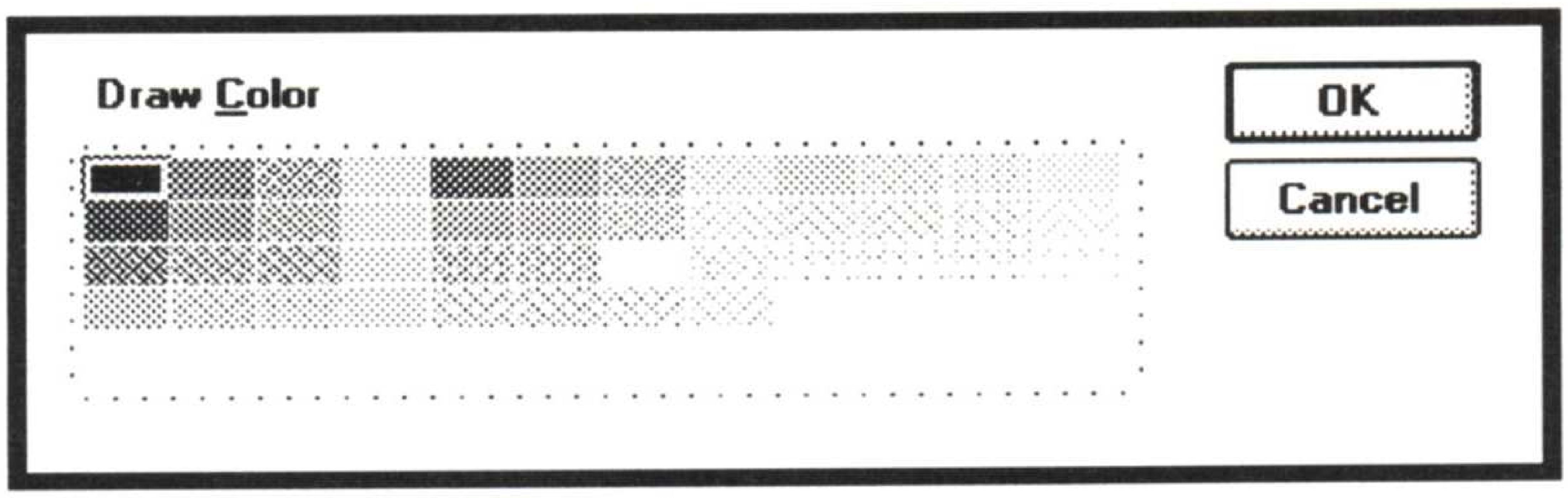


Figure 5-9 Choosing a Color

3. Select the color you want.
4. Choose OK.

Outlining or Filling Draw Objects

Rectangles, round rectangles, and ellipses are initially solid.

To change a solid object to an outline:

1. Select the object.
2. Choose Border Thin, Medium, Thick, or Other to define your own line width.

   When you choose Other, a dialog box appears.

- Choose DDE Data Request to display an image from an application that uses DDE. For more information, see "Displaying an Image from a DDE Request."

Displaying a PCX or BMP File

When you choose PCX File or BMP File from the Image Source menu, the Image Source File dialog box appears.

1. Type a filename in the Filename text box or double-click on a filename in the Files list box.
2. Choose OK.

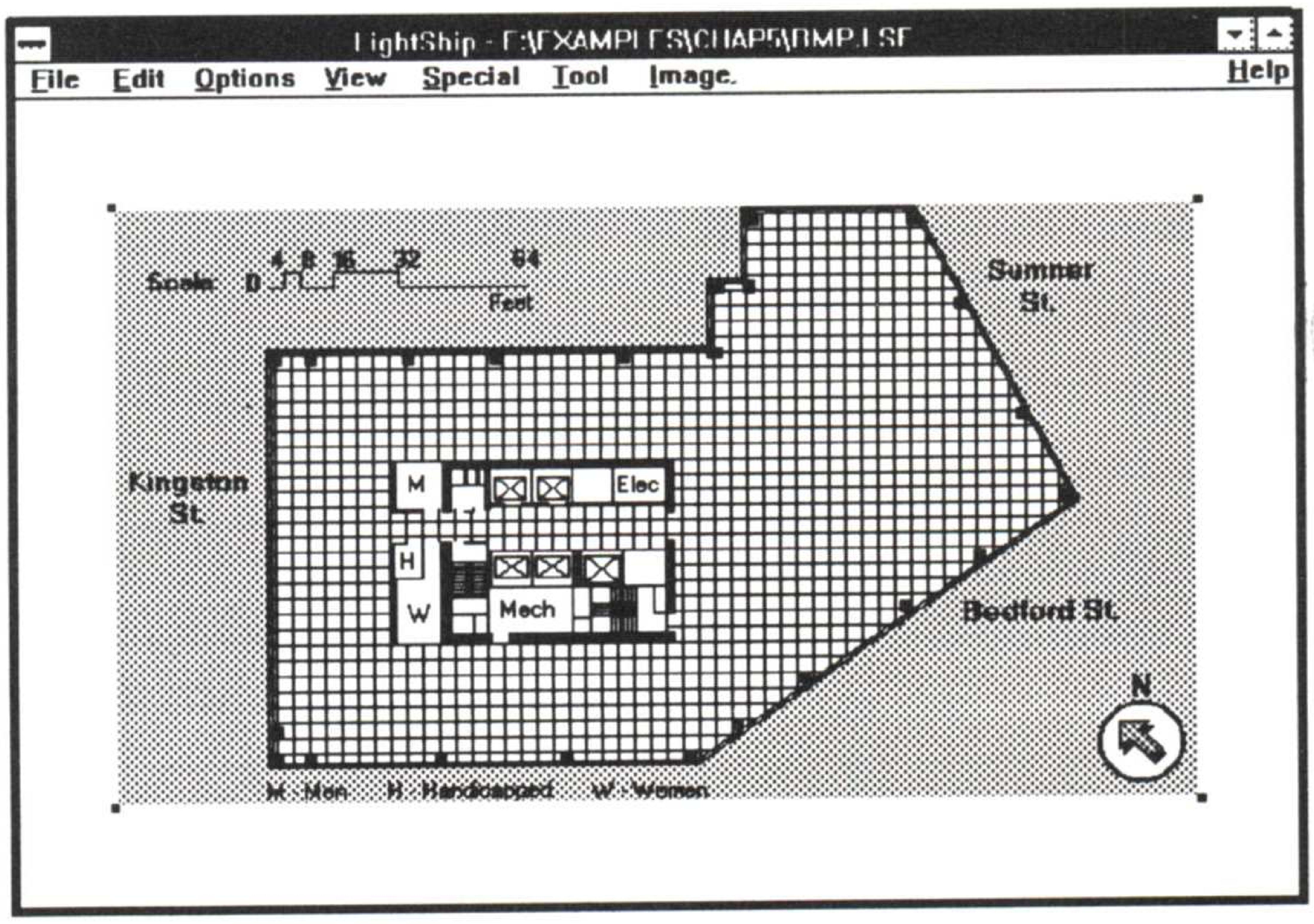


Figure 5-14 Displaying a BMP File

16-color display adapters display 16 solid colors and 32 dithered (mixed) colors. When you select a color on the Palette dialog box, the color you select displays in the Color and Solid boxes on the right, as shown in Figure 5-11. If you have a 16-color monitor, when you select a dithered color, you will see the dithered color displayed in the Color box and the solid color displayed in the Solid box. One of the colors will appear on the Color dialog boxes for the different objects, depending on the type of object you are coloring. If you are coloring foreground text or a line, the solid color will be displayed. If you are coloring an area or a background, (and a dithered color is selected) the dithered color will be displayed.

Changing a Color

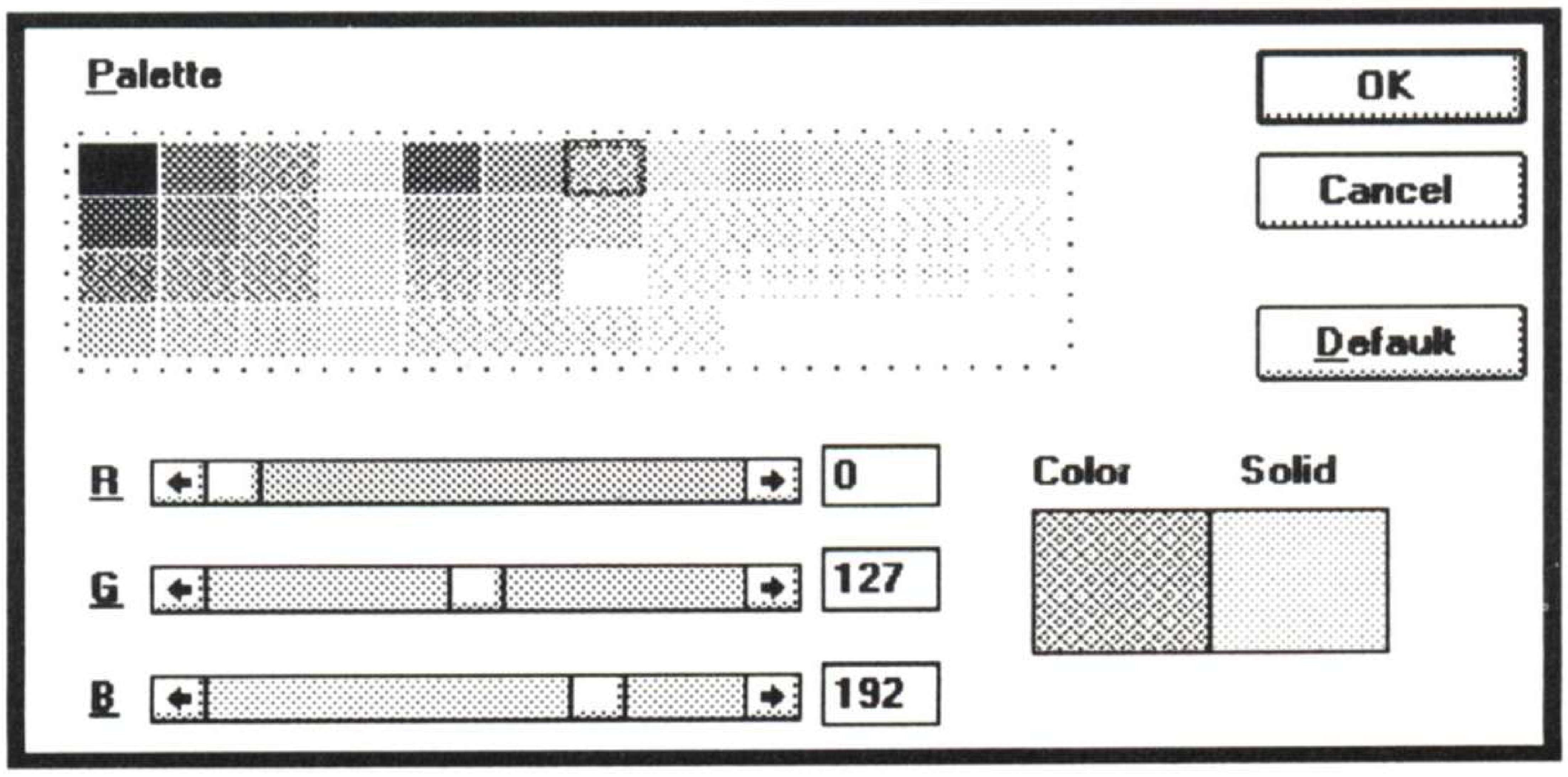
Use the scroll bars in the lower-left corner of the Palette dialog box to change the amount of red, green, and blue in each color. When the scroll box is all the way to the right, the amount of red, green, or blue is at its maximum. When the scroll box is all the way to the left, the color is eliminated.

If the OK button becomes unavailable, it means you have entered an invalid number in one of the RGB text boxes.

■ **To change a color on the palette:**

1. Choose Options Palette or press SHIFT+F5.

   A dialog box appears.



R 0

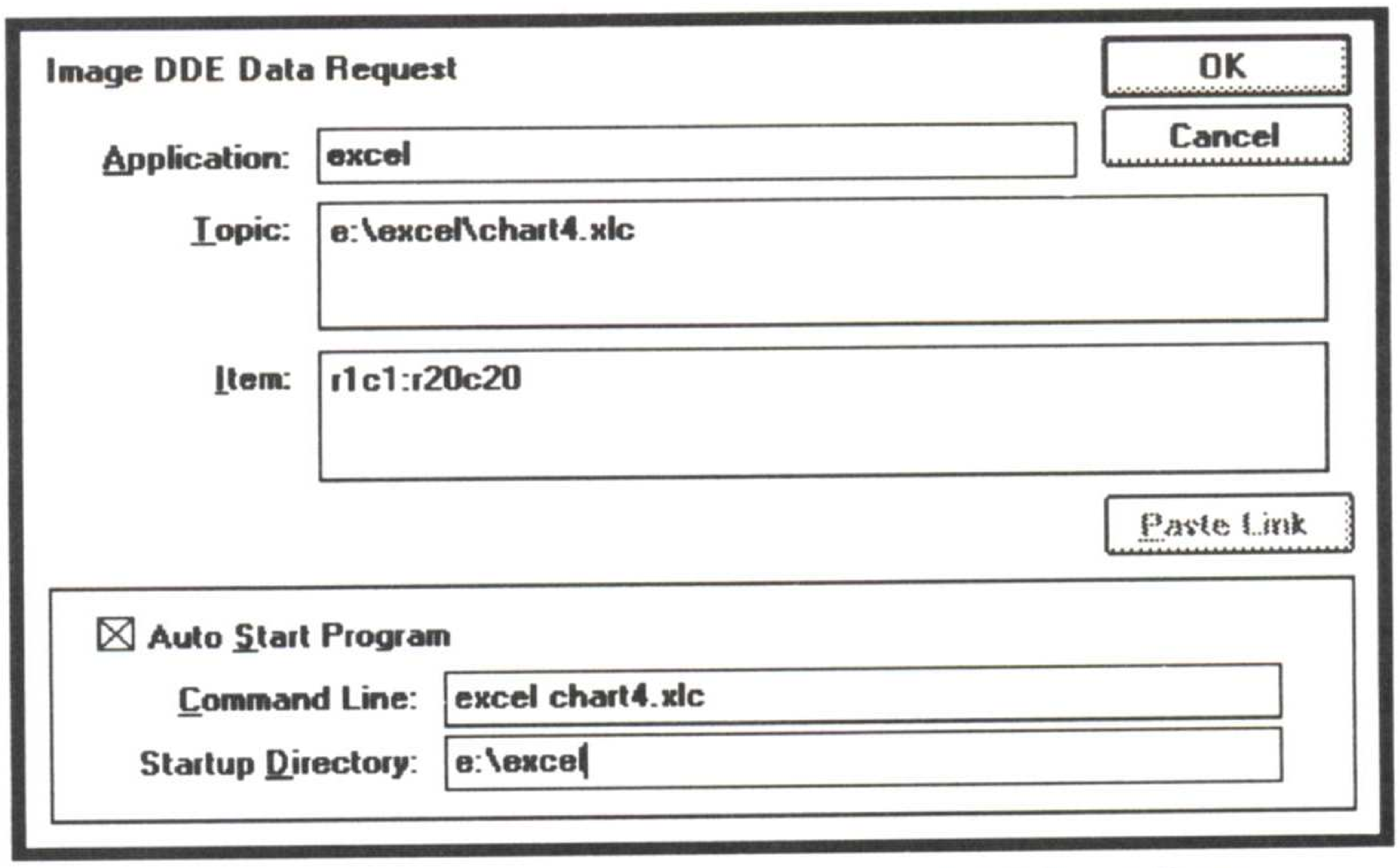
G 127

B 192

Figure 5-11 Changing the Palette

Displaying an Image from a DDE Request

When you choose DDE Data Request from the Image Source menu, the dialog box shown in Figure 5-16 appears.



Application: excel
Topic: e:\excel\chart4.xlc
Item: r1c1:r20c20

☒ Auto Start Program
Command Line: excel chart4.xlc
Startup Directory: e:\excel

Figure 5-16 Importing an Image with a DDE Data Request

The program to which you send the DDE Request is called the *server* or *server application*. It must support the CF_BITMAP format.

The exact form of the DDE Request will vary, depending on the application. However, all applications using DDE must have an *application name*, a *topic* (basic data grouping), and an *item* (specific data within the topic) defined. For the exact syntax, refer to the documentation of the application from which you are getting the image. For more complete information about DDE, see *Chapter 12: Using Dynamic Data Exchange*.

You might want to define a global variable in LS.INI to specify a pathname for the application from which you are requesting data.

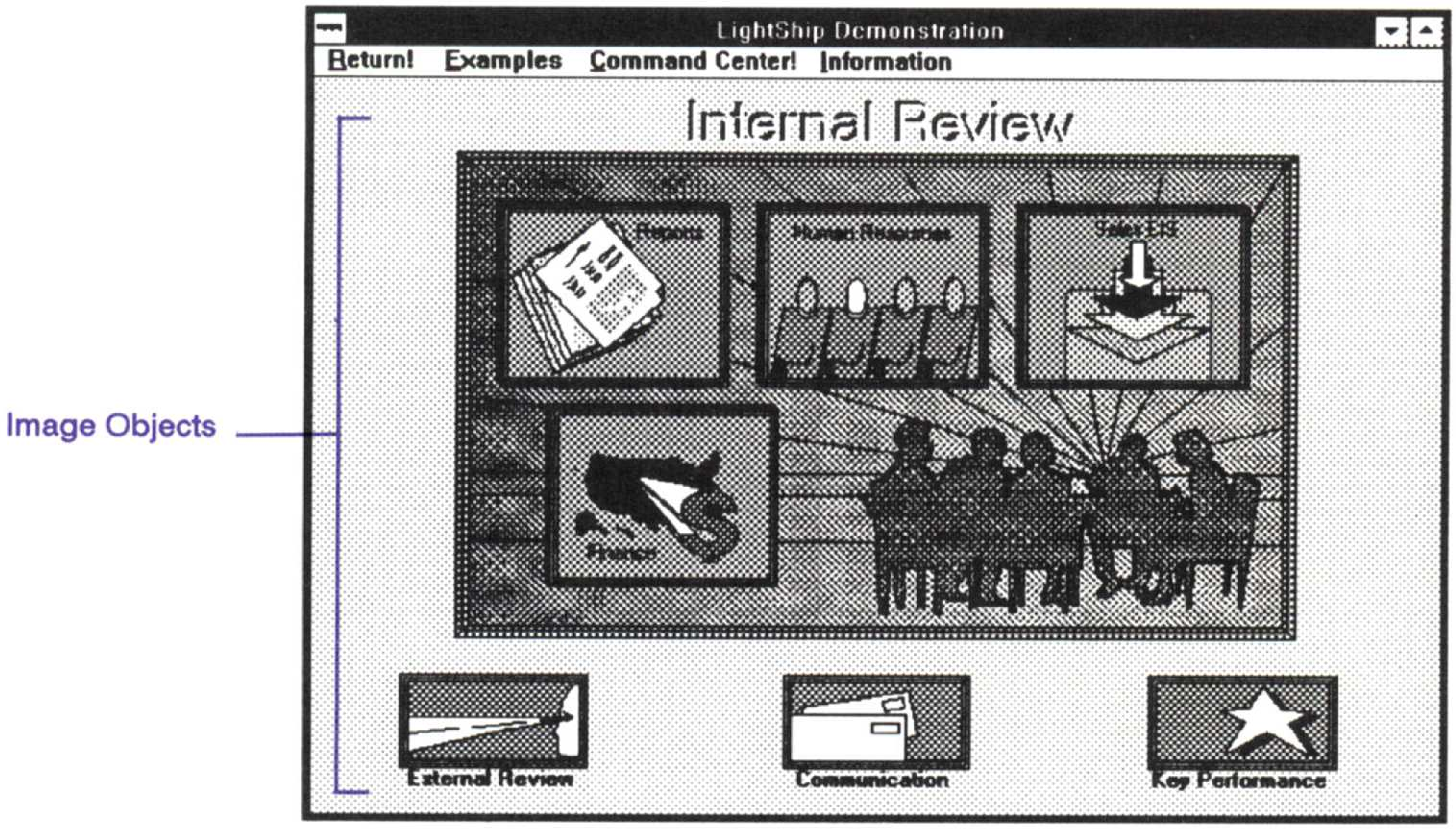


Figure 5-12 Displaying Images

The Image Menu

When you create or select an image, the Image menu appears on the menu bar. Use this menu to:

- Change the source of the image.
- Change the size and scale of the image or the image object window.
- Make a copy of the palette for that image.

By default, an image object is created in the same size as the original image. Use the settings on the Image menu to change the size of an image object.

When Images are Updated

LightShip displays the most current image in an image object whenever you open a screen. LightShip also updates image objects automatically as described below. In addition to automatic updates, you can manually update image objects by executing a Calculate Now command.

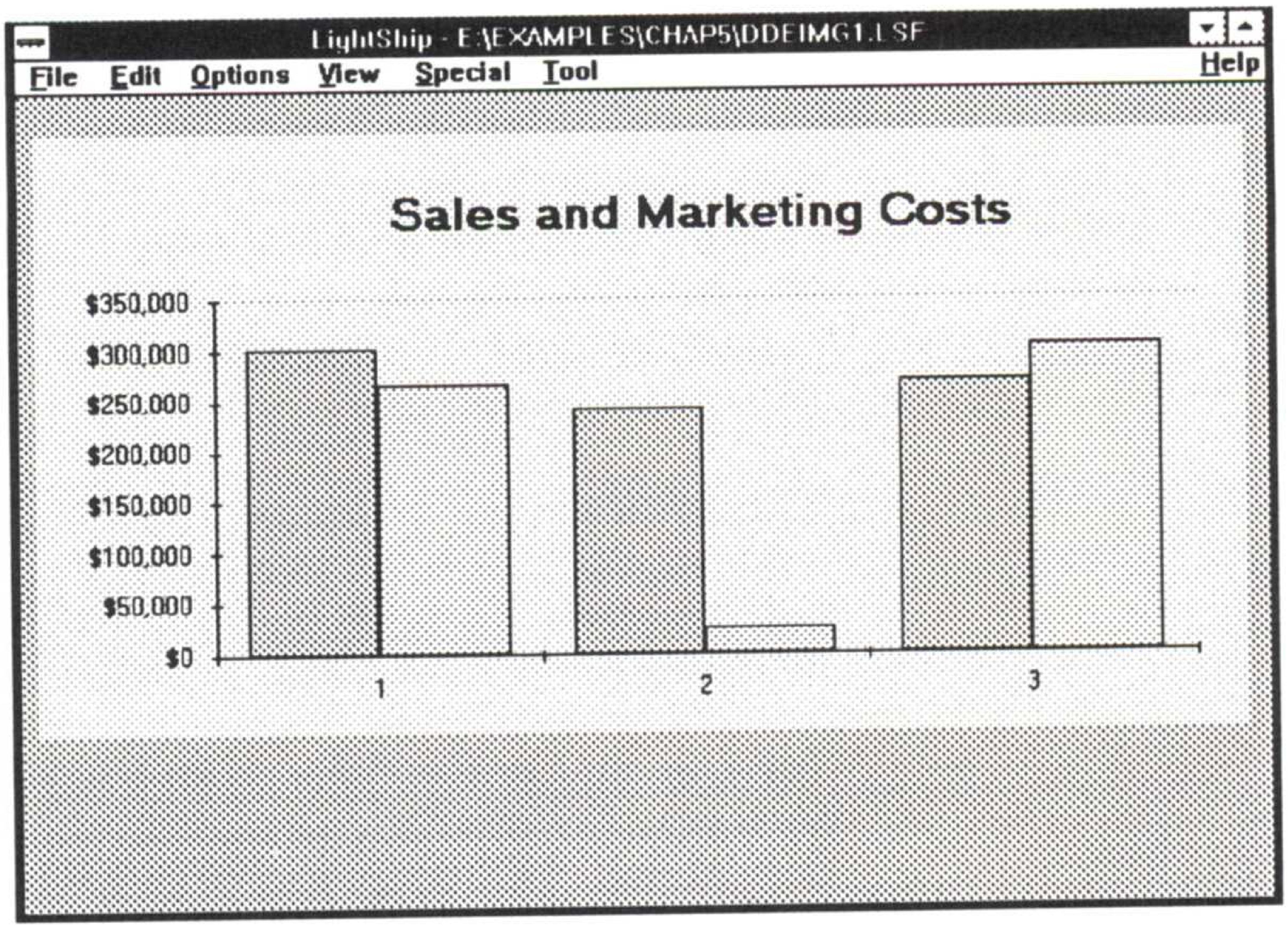


Figure 5-17 Importing a DDE Bitmap

Changing an Image Source

■ **To change the source of the image:**

1. Select the image object.

2. Choose Image Source, double-click on the object, or press F2.

   The Image Source menu appears.

3. Choose the source.

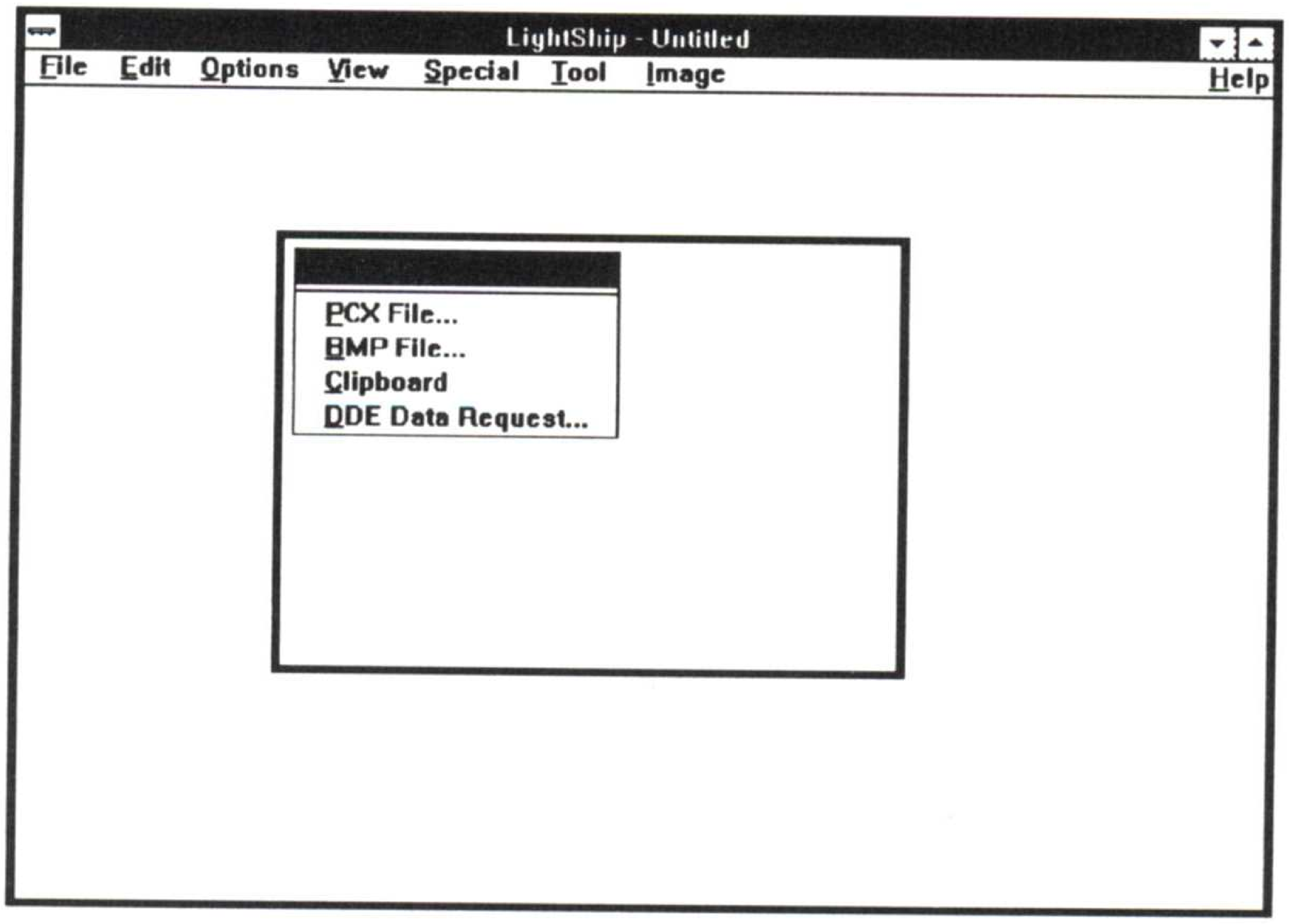


Figure 5-13 Creating an Image Object

4. Choose one of the menu items.

   - The Palette option is not available unless you turn on Image Save Palette. To read about changing the image's palette, see "Coloring an Image Object."

   - Choose PCX File to display a PCX image. For more information, see the next section "Displaying a PCX or BMP File."

   - Choose BMP File to display a BMP image. For more information, see the next section "Displaying a PCX or BMP File."

   - Choose Clipboard to display a Clipboard image. For more information, see "Displaying an Image from the Clipboard."

     If the Clipboard option is not available, it means there is no bitmap on the Clipboard. Cutting or copying a bitmap image from any Windows application saves it on the Clipboard.

Resetting the Palette

- **To return the colors to the way they were when you opened the dialog box:**

  Choose the Default button.

- **To return to the original colors of the image:**

  Turn Save Palette off and choose OK when LightShip asks if it is OK to delete the saved palette.

Changing the Size and Scale of an Image

Unless you change the settings on the Image menu before creating an image, it is created in the same size as the original. You can change the size and scale of images in the following ways:

- Resize the image and the image object window together.
- Resize the image independently of the image object window.
- Resize the image object window independently of the image.

☞ **Hint**

LightShip's performance is best when an image is 1:1 in scale.

Resizing an Image and the Window Together

There are two ways to resize the image and the image object window together. You can type in numbers for the scale or resize the image by dragging it with the mouse. If you drag it, it might not resize proportionately.

Displaying an Image from the Clipboard

Clipboard images must be in CF_DIB or CF_BITMAP format. CF_DIB is a device-independent format. CF_BITMAP is the Clipboard bitmap format. If a CF_BITMAP image has palette information stored with it (in CF_PALETTE format), LightShip also uses the palette information.

When you choose Clipboard from the Image Source menu, the image appears in the image object.

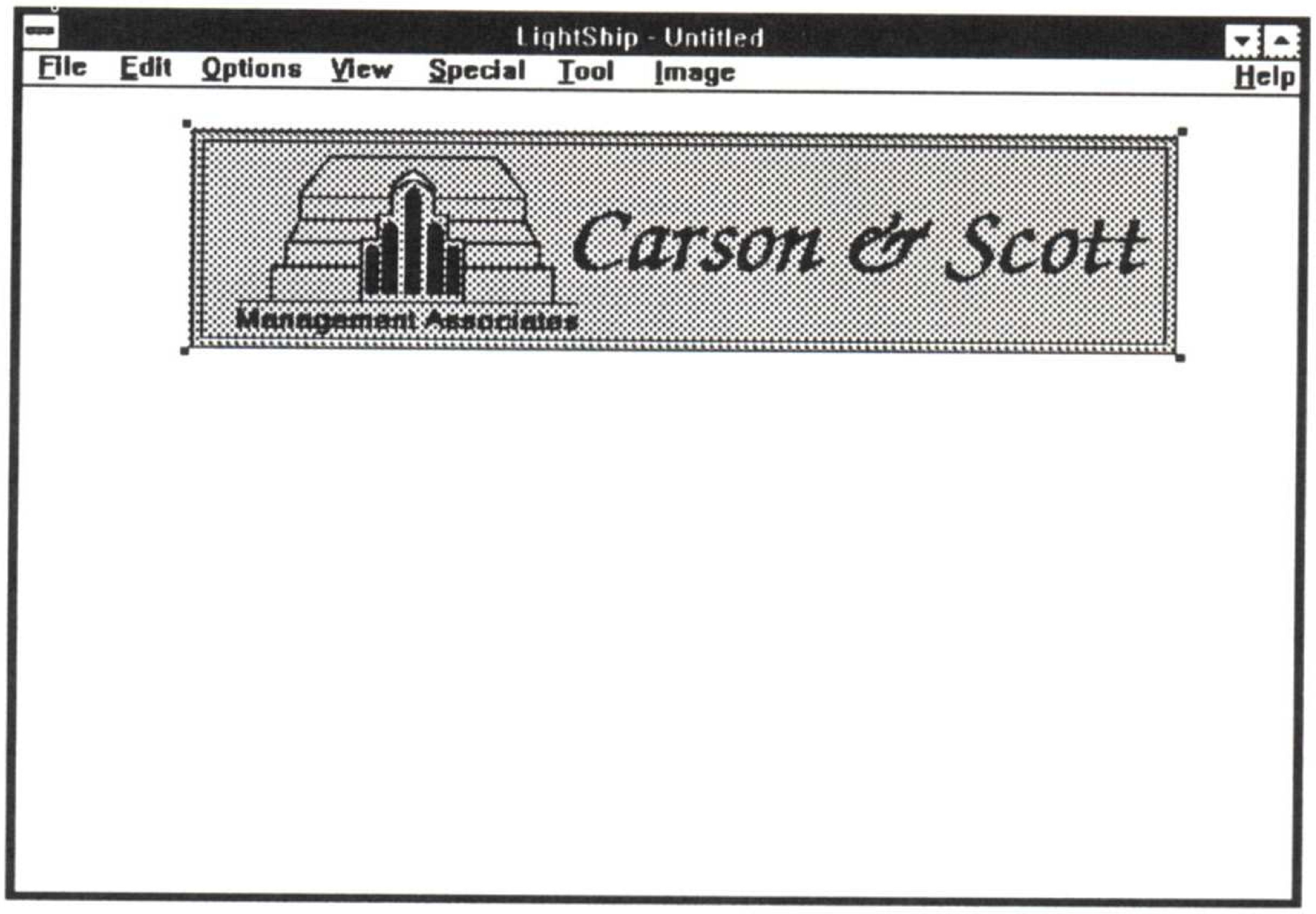


Figure 5-15 Displaying a Clipboard Image

Resizing an Image and the Window Separately

Resizing the Image Only

- **To change the size of the image and leave the image object window the same size:**

1. Select the image object.
2. Turn off both Fit Object to Image and Fit Image to Object.
3. Choose Image Scaling and type in the numbers for the scale.
4. Choose OK.

Resizing the Window Only

- **To change the size of the image object window and leave the image the same size:**

1. Select the image object.
2. Turn off both Fit Object to Image and Fit Image to Object.
3. Resize the image object by dragging any corner with the mouse.

* * *

Defining a DDE Request

1. Type in the server application name, topic, and item. The application name is limited to 32 characters. The topic and item cannot exceed 255 characters each.

   Or

   - Go to the server application and copy the data to the Clipboard. The application must support the Link format. If there is data on the Clipboard in the Link format, the Paste Link button is available; otherwise, it is dimmed.
   - Choose the Paste Link button and LightShip fills out the application, topic, and item for you.

2. Turn on Auto Start Program to start the server application when the DDE Data Request is issued, if it is not already running.

3. Type the command to start the server application.

   - Fully specify the pathname of the server application if it is not defined by the DOS Path command or if you do not specify its path in the Startup Directory text box.
   - Fully specify the pathname of the file if it is not defined by the DOS Path command or if you do not specify its path in the Startup Directory text box.

4. (Optional) To start the server application in a different directory than the current one, type the drive and directory in the Startup Directory text box.

   This lets you use files in that directory without specifying a path. The current working directory remains the same.

5. Choose OK.

   The image appears on the screen. Figure 5-17 shows an Excel chart displayed with a DDE Data Request.

4. Type in the text.

   - Press CTRL+ENTER to start a new line. Do not press ENTER until you have finished typing.

     If you press ENTER by mistake, double-click on the object to start typing again. The text is highlighted. If you press a key without clicking in the document first, it deletes all highlighted text. To bring it back (before you do anything else), press the ESC key, then start again.

5. Choose OK.

   The text appears in the text object. If all the text does not show, resize the text object.

Justifying Text

■ **To justify text:**

1. Select the text object.
2. Choose Text Justification Left, Center, or Right.

Coloring a Text Object

You color text and its background with different colors. All of the Text colors are solid, but some of the Background colors might be dithered, that is, made up of different colored dots. Text shows up more clearly when you place it on a solid background. If you are unsure which colors are solid and which are dithered, choose Options Palette. The Palette dialog box shows whether a color is solid or dithered in the Solid and Color boxes.

Coloring an Image Object

There are 256 colors possible on a LightShip screen if you have a 256-color display adapter. Sixteen colors are used by Windows and 48 colors are used by the LightShip default palette for draw objects, text colors, and so on. This leaves 200 colors for images.

When you display an image, LightShip attempts to match each color to a color on the palette. If the color is not on the palette, LightShip adds it. If the palette is full, LightShip uses the nearest available color.

You can change the color of an image within LightShip by associating a particular palette with the image and then changing the palette. This saves you from having to use a paint program to change colors.

Coloring an Image

■ **To change the color of an image:**

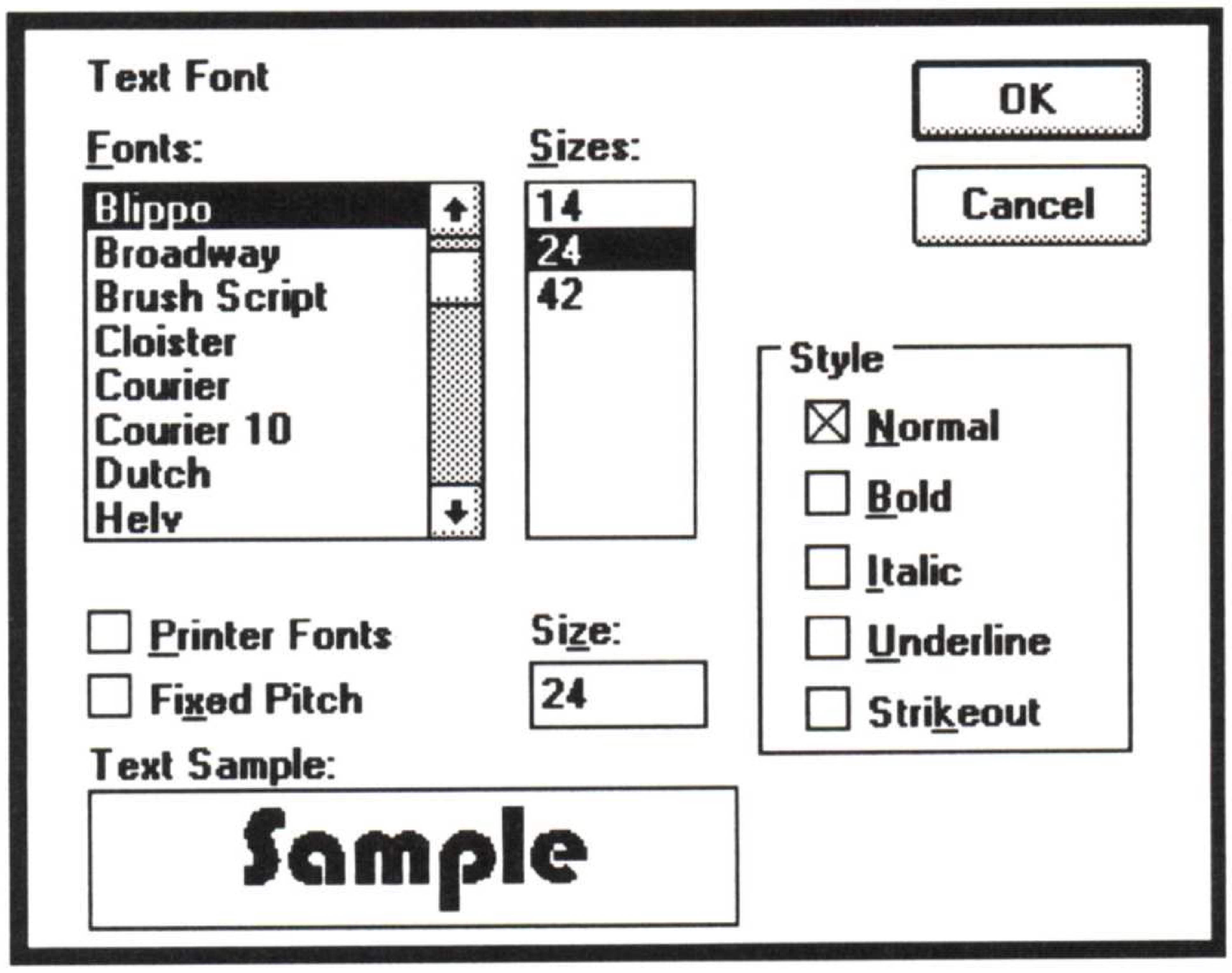
1. Select the image object.
2. Choose Save Palette.

   This makes a copy of the palette for that image.
3. Choose Image Source Palette.
4. Select a color you want to change.
5. Drag the scroll box or type a number from zero to 255 in any or all of the RGB boxes.
6. After you are finished changing all the colors, choose OK.

To choose a font:

1. Select the text object.
2. Choose Text Font or press F6.

   A dialog box appears.



Size: 24

☒ Normal
☐ Bold
☐ Italic
☐ Underline
☐ Strikeout

☐ Printer Fonts
☐ Fixed Pitch

Figure 5-4 Choosing a Font

3. Choose the font, point size, and style.
4. Choose OK.

Creating Shadowed Text

To make text appear three-dimensional:

1. Create a text object.
2. Color it and select a font.

Resizing with the Mouse

■ **To resize the image by dragging it with the mouse:**

1. Select the image object.
2. Turn on Fit Image to Object.
3. Resize the image object window by dragging any corner.

Typing in the Scale Manually

■ **To type in the scale manually:**

1. Select the image object.
2. Leave on Fit Object to Image and choose Image Scaling.

   A dialog box appears.

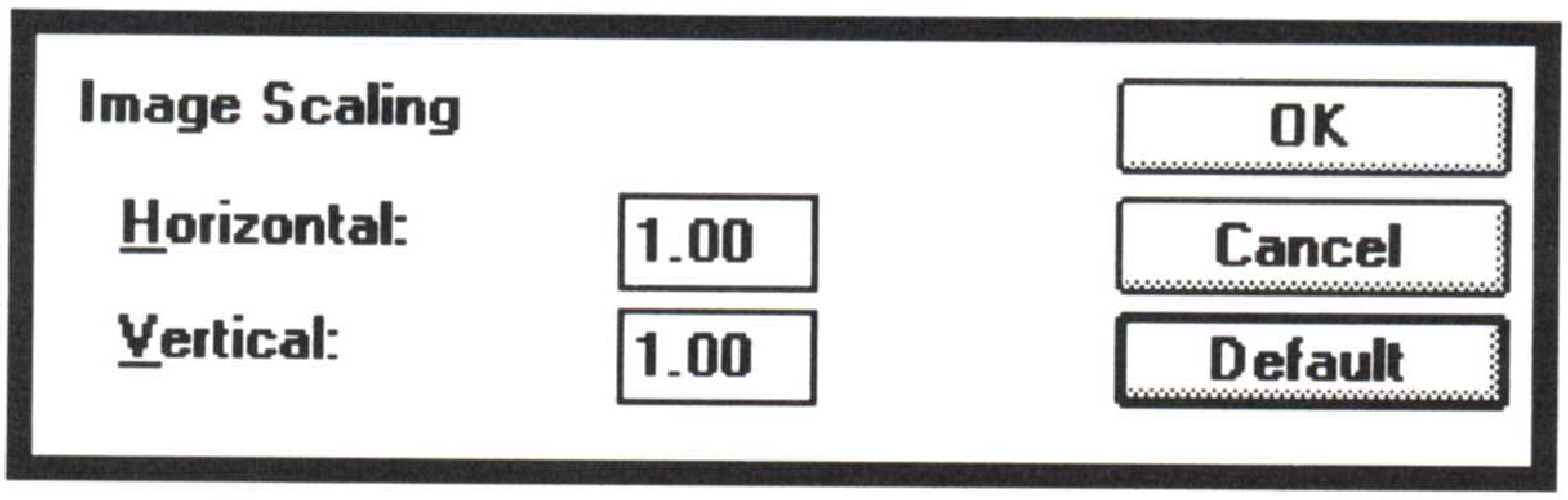


Image Scaling

Horizontal: 1.00

Vertical: 1.00

Figure 5-18 Scaling an Image

3. Type in the numbers for the Horizontal and the Vertical axes.

   The scale is determined relative to the size of the original image in the source file.

4. Choose OK.

Resetting the Scale

■ **To reset the scale to the default setting:**

Choose Default to reset the Horizontal and Vertical scale to 1:1.

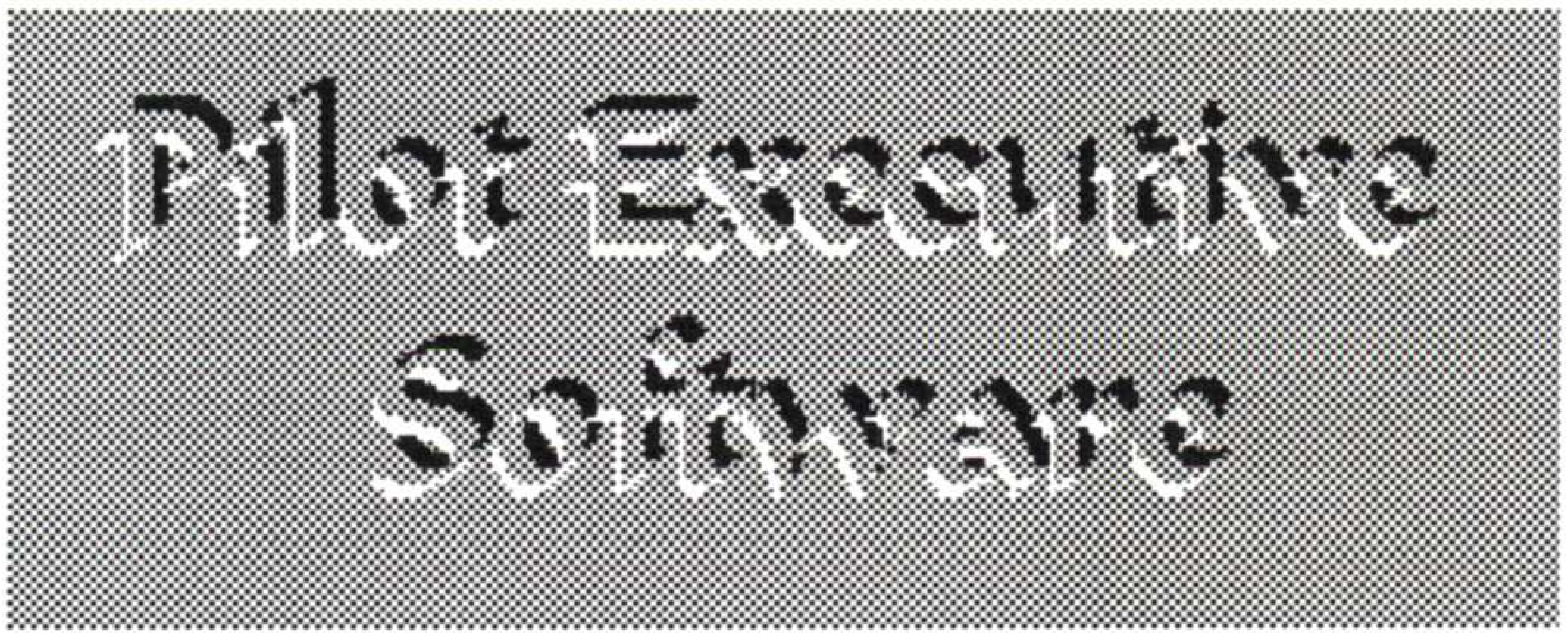


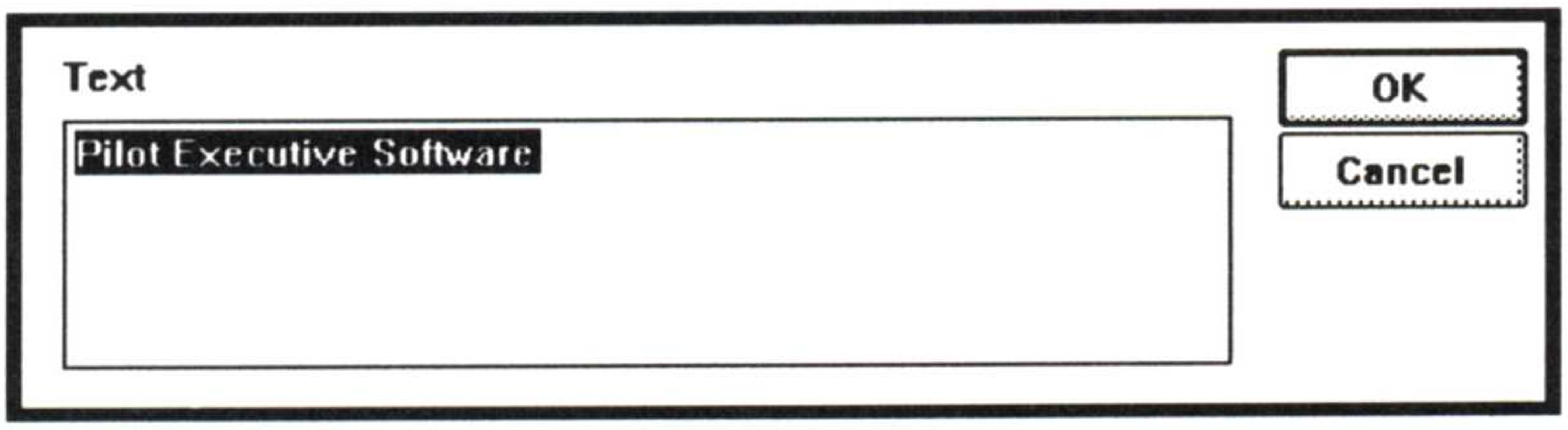
Figure 5-6 Raised Text

Changing Text

- **To change the text:**

1. Select the text object.
2. Choose Text Text, press F2, or double-click on the text object.

   A dialog box appears with the text highlighted.



Text

Pilot Executive Software

Figure 5-7 Editing Text

3. To overwrite the text, just start typing.

   To insert text, click on the insertion point before you start typing or you will lose all the text. If you do accidently lose your text, press ESC immediately and start again by pressing F2.

   - Press CTRL+ENTER to start a new line. Do not press ENTER until you have finished typing.

The Text Menu

When you create or select a text object, the Text menu appears on the menu bar. The Text menu allows you to:

- Change the text
- Justify the text
- Color the text and background
- Choose a font, point size, and style

Creating a Text Object

You can type text or a variable reference, for example, *@(item)*, in a text object. If you type a variable reference, the value of the variable is displayed at both the Author and Browse levels. If the variable has no value, the text object appears blank.

You can use all the edit keys you normally use when you enter text in a text box. For more information on edit keys, see *Chapter 1: Getting Started*.

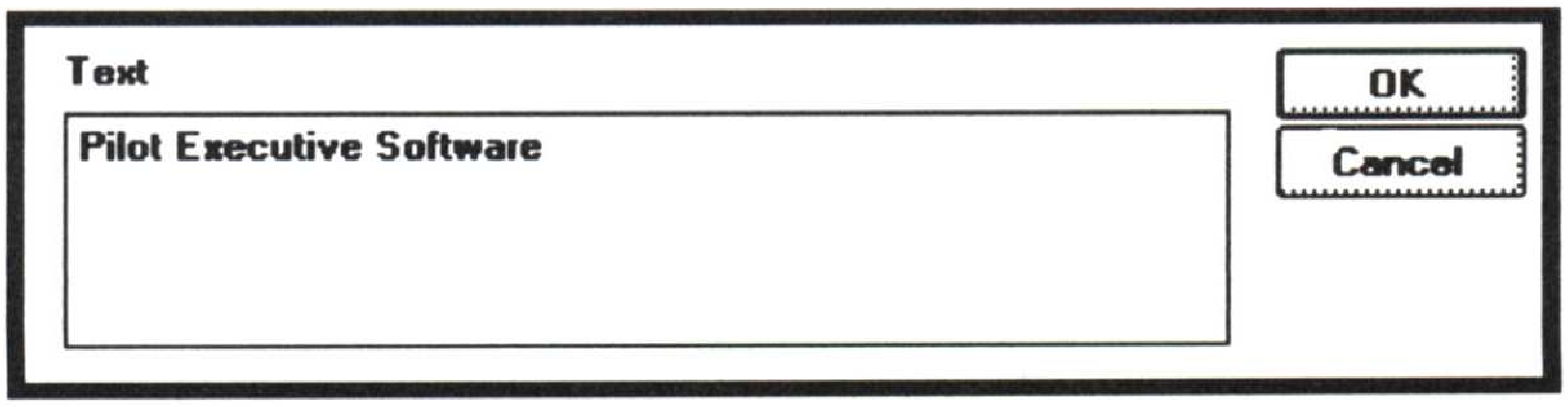
To create a text object:

1. Choose Tool Text.

2. Drag or click the mouse to create the text object.

3. Choose Text Text, press F2, or double-click on the object.

   A dialog box appears.



Text

Pilot Executive Software

Figure 5-2 Editing Text

The Draw Menu

When you create or select a draw object, the Draw menu appears on the menu bar. This menu allows you to:

- Choose the draw object shape.
- Fill or outline the object.
- Color the object.

Creating a Draw Object

You can create a draw object either from the Tool menu or from a draw tool icon on the Toolbox. You can constrain draw objects when creating them by turning on the grid. Constraining draw objects allows you to draw straight lines, squares, and circles.

■ **To constrain draw objects to the grid:**

Turn on View Grid Snap or hold down the CTRL key before drawing.

Creating Draw Objects from the Toolbox

Use the Toolbox when you want to create multiple objects.

■ **To create draw objects from the Toolbox:**

1. Choose Tool Toolbox.

   The Toolbox appears on the screen.

2. Select the Draw tool (the pencil icon).

   The draw tool icons appear on the right side of the Toolbox.

Coloring Text

■ To color text:

1. Select the text object.
2. Choose Text Color or press F5.

   A dialog box appears.

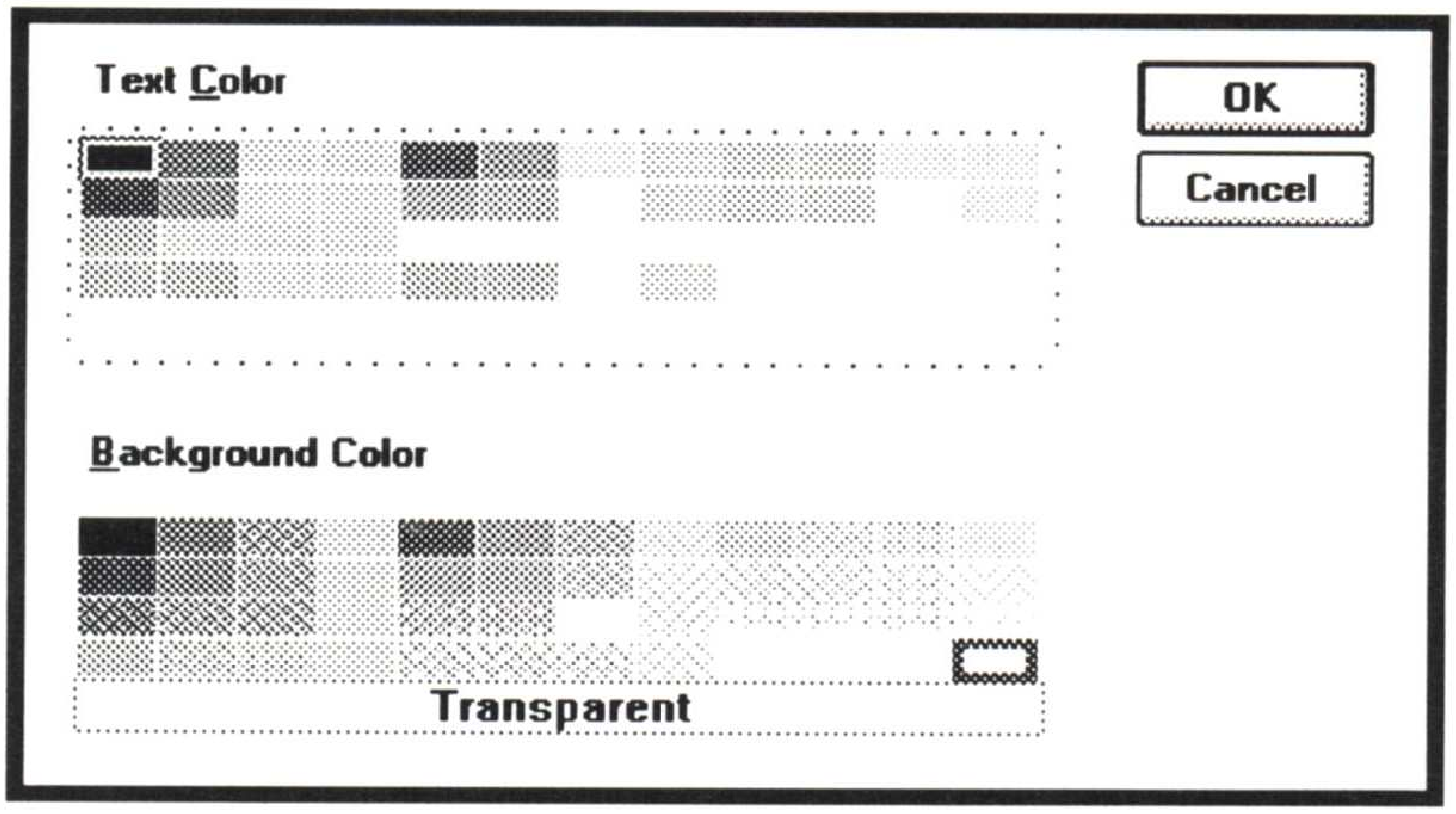


Figure 5-3 Coloring Text

3. Select a text color.
4. Select a background color or select Transparent if you want the color of whatever is underneath the text object to show through the background.
5. Choose OK.

Choosing a Font

The Text Font dialog box is the same as the one used for document object font selection. See "Choosing a Font" in *Chapter 4: Displaying Data* for more information about choosing fonts.

Creating a Draw Object from the Tool Menu

Drawing a Rectangle or an Ellipse

Rectangles are solid by default.

■ **To draw a rectangle, round rectangle, or an ellipse:**

1. Choose Tool Draw.
2. Choose Draw Shape Rectangle, Draw Shape Round Rectangle, or Draw Shape Ellipse.
3. Drag or click the mouse to create the object.

Drawing a Line

■ **To draw a line:**

1. Choose Tool Draw.
2. Choose Draw Shape Line.
3. Click and drag the mouse to draw the line.
4. Click the mouse to end the line.

Drawing a Polygon

■ **To draw a polygon:**

1. Choose Tool Draw.
2. Choose Draw Shape Polygon.
3. Click and drag the mouse to draw the first line of the polygon.
4. Click the mouse when you want the line to go in another direction.
5. Double-click the mouse to end the polygon.

3. Duplicate the text object.
4. Drag the copy away from the original.
5. Change the color of one of the objects and make the background transparent.
6. Drag the text with the transparent background so that it is in front of the other text object.

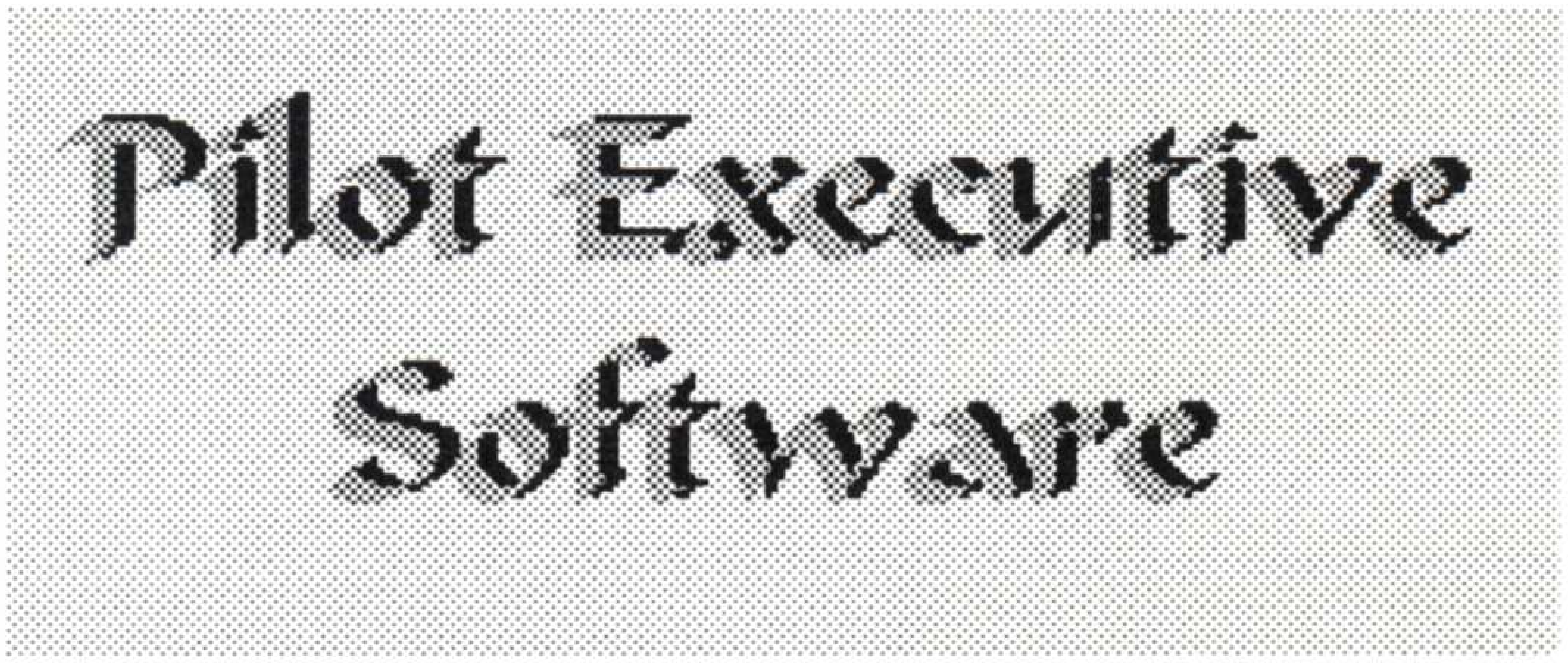
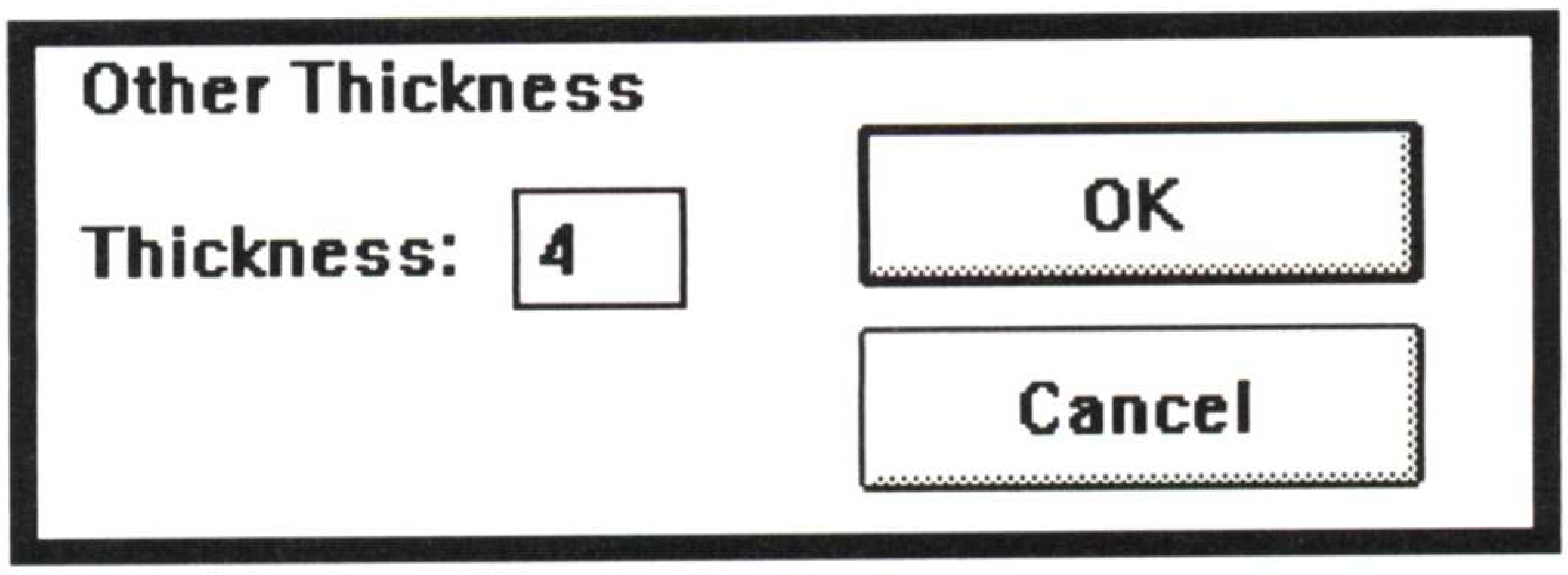


Figure 5-5 Shadowed Text

■ **To make text appear raised:**

1. Create three copies of a text object.
2. Make one of the copies the same color as the screen background and the other two different colors.
3. Make all the backgrounds transparent.
4. Position them so the object that matches the color of the background is outlined by the other two objects.



Thickness: 4

Figure 5-10 Changing the Width of a Line

1. Type a number from one to 48 to represent the line thickness.

   The lower the number, the thinner the line.

2. Choose OK.

Changing the Color Palette

There are 48 colors available for objects and screen color on the Palette dialog box. You can modify the palette, which changes the colors available for all objects. The palette is saved with the screen.

LightShip uses a Red (R), Green (G), and Blue (B) color palette. You can display the RGB numbers for all the colors on the palette by choosing Palette List in the Debug window.

256-Color Display Adapter

If your display adapter supports 256 colors, you can display 256 colors as solid, if Options Optimize Palette is turned on. This uses the best colors possible for the installed display device driver.

16-Color Display Adapter

If you are developing applications using a 16-color display adapter and you want to keep the colors the same even if displayed on a 256-color display adapter, leave Options Optimize Palette off.

If you press ENTER by mistake, double-click on the object to start typing again.

4. Choose OK.

What is a Draw Object?

A draw object is a simple shape you draw on the screen. Figure 5-8 shows a screen with draw objects.

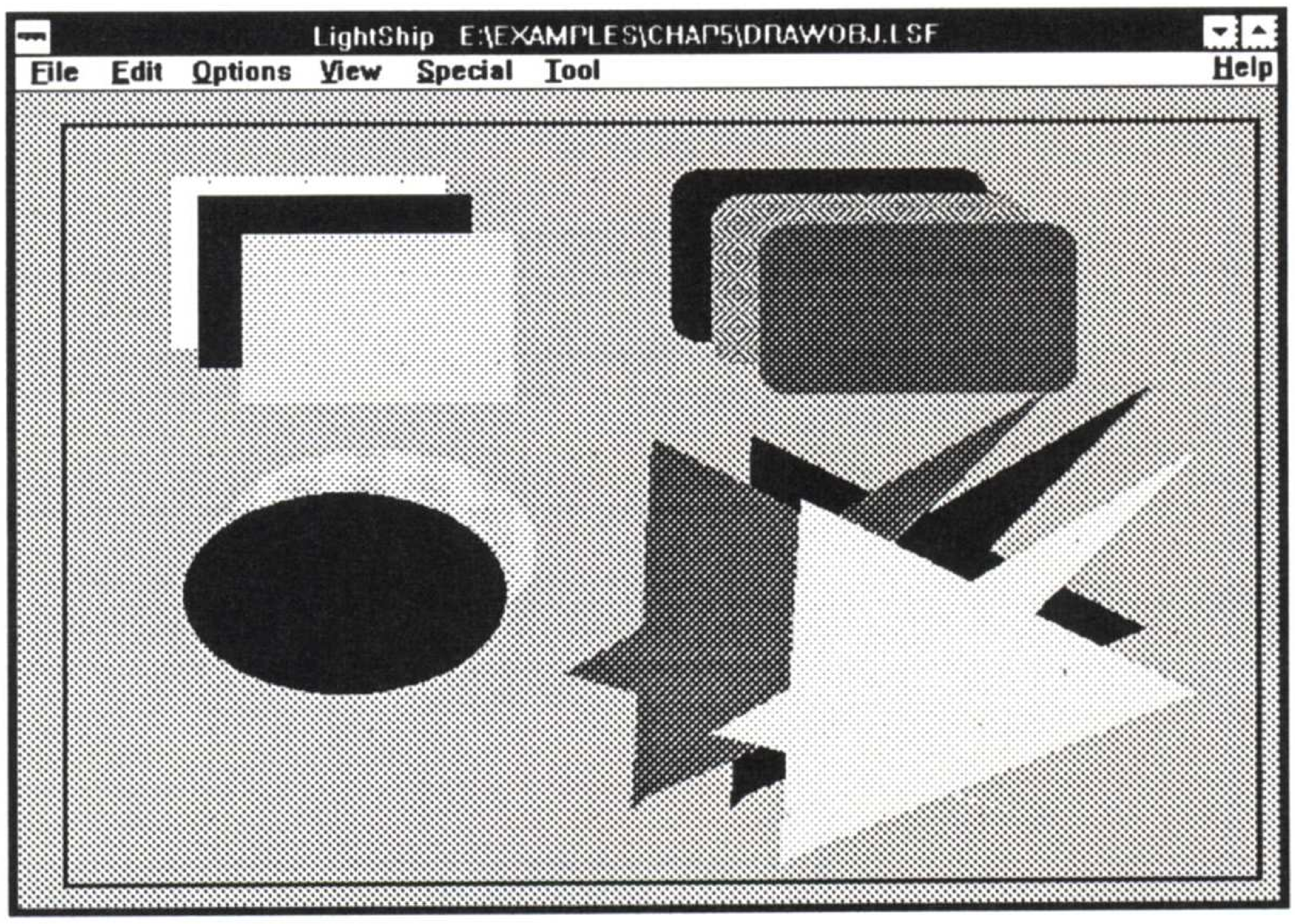


Figure 5-8 Draw Objects

You can draw the following types of objects:

- Rectangles
- Round Rectangles
- Lines
- Ellipses
- Polygons

2. Select the color.
3. Drag the scroll box or type a number from zero to 255 in any or all of the RGB boxes.

   The color you are creating displays in the Color and Solid boxes in the lower-right corner of the dialog box.
4. Choose OK.

Resetting the Palette

■ **To return the colors to the way they were when you opened the dialog box:**

Choose the Default button.

What is an Image Object?

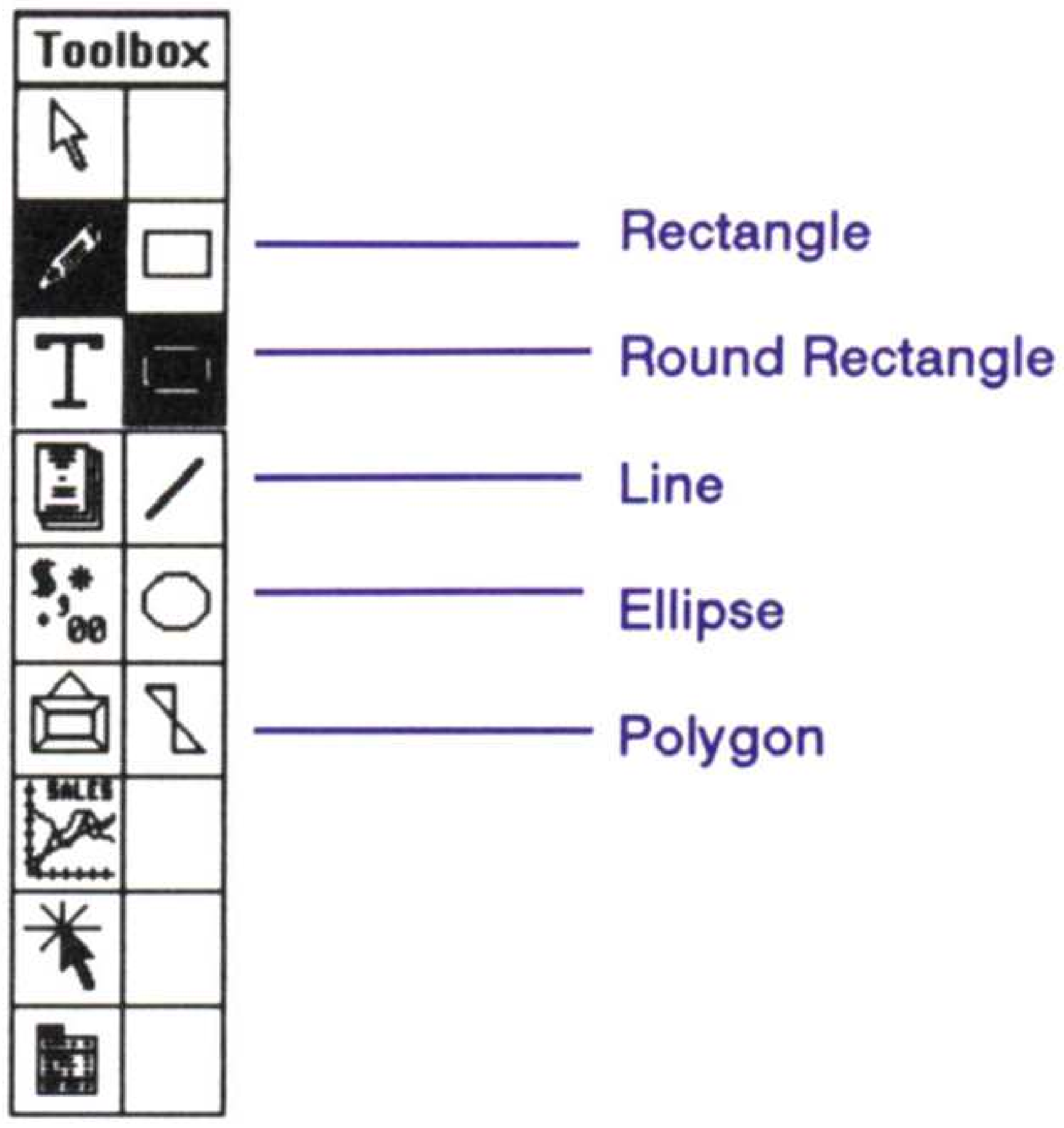
You display a graphic image by creating an image object and then specifying the source of the image. An image object can display an image from:

- A PCX file, which is a type of graphic file format.
- A BMP file, which is a bitmap format created by Windows Paint.
- The Clipboard, which must be in CF_DIB or CF_BITMAP format.
- A DDE Request, which must conform to the CF_BITMAP format.

☞ **Hint**

Clipboard images are saved with the screen, which makes them faster to display. PCX files, BMP files, and DDE Data Requests are loaded into the image object each time the screen is displayed.

Figure 5-12 shows a screen with image objects used as icons.



3. Select the tool that you want.

   - If you select the rectangle, round rectangle, or ellipse, every time you click or drag the mouse, you will create another object of that type.
   - If you select the line tool, click to start the line, drag to draw the line, and then click to end the line.
   - If you select the polygon tool, click the mouse every time you want to end a line in the polygon. Double-click to end the polygon.

To leave Create mode:

Select the pointer at the top of the Toolbox.

To close the Toolbox:

Double-click on the Toolbox title bar or choose Tool Toolbox again.

DDE Requests

When Calculation Automatic is on, image objects whose source is a DDE Request are updated when:

- Source data changes.
- A literal or variable reference in a DDE Request dialog box changes.

When Calculation Manual is on, if you make a literal change to a DDE Request dialog box, you are prompted to execute the request.

PCX and BMP Files

Image objects whose source is a PCX or BMP file are always updated when you make a literal change to the filename. If Calculation Automatic is on, and a variable reference in the filename changes, the image object is also updated.

Creating an Image Object

■ **To create an image object:**

1. Choose Tool Image.
2. Drag or click the mouse to create the object in which the image will appear.
3. Choose Image Source, press F2, or double-click on the image object.

   The Image Source menu appears, as shown in Figure 5-13.

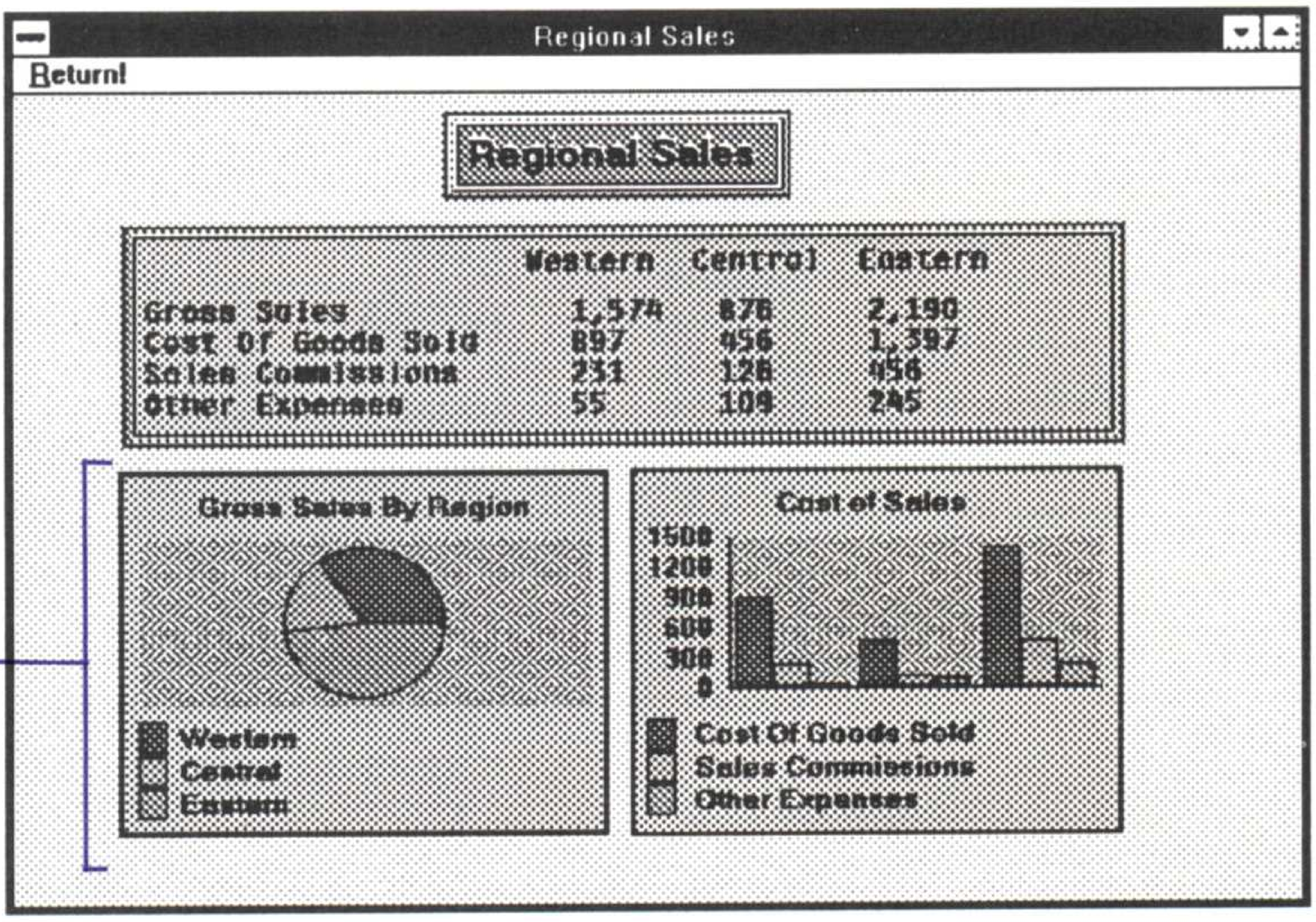
CHAPTER 6

CREATING CHARTS

This chapter describes how to chart the data in document objects.

What is a Chart Object?

LightShip displays charts in chart objects. Chart objects are dynamically linked with document objects so that you see changes in data immediately.



	Western	Central	Eastern
Gross Sales	1,574	876	2,190
Cost Of Goods Sold	897	456	1,397
Sales Commissions	231	126	456
Other Expenses	55	109	245

Chart Objects

Figure 6-1 LightShip Charts

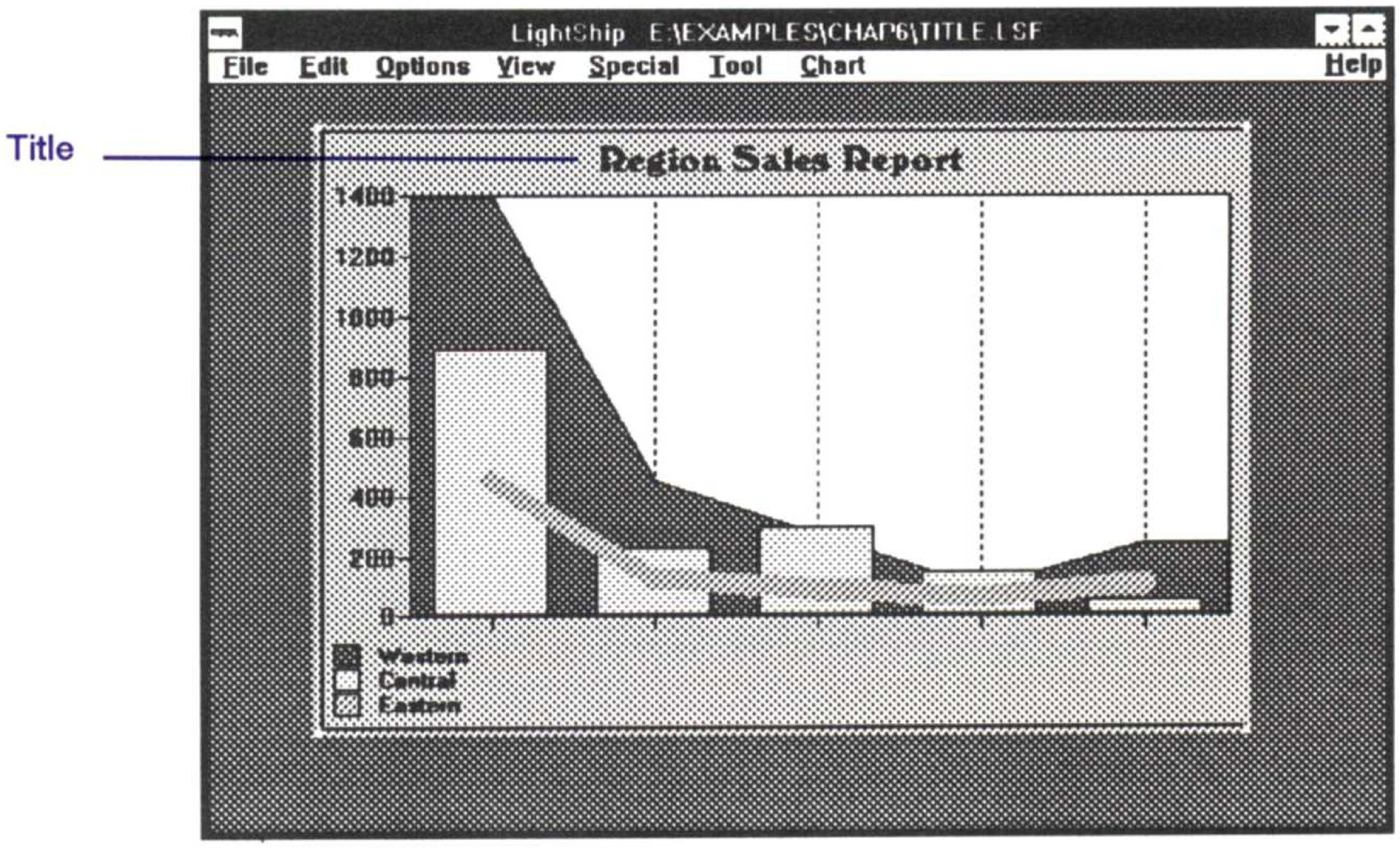

Title
LightShip E:\EXAMPLES\CHAP6\TITLE.LSF
File Edit Options View Special Tool Chart Help
Region Sales Report
1400
1200
1000
800
600
400
200
0
Western
Central
Eastern

Figure 6-22 Displaying a Title

Displaying Labels

Labels are the text associated with each data point. They are displayed along the category axis, which is usually horizontal, and are called category labels to distinguish them from the numeric labels that are displayed along the numeric axis. Like the chart title, you add category labels to a chart by selecting text from a document object in Point mode.

■ **To display labels:**

1. Select the chart.
2. Choose Chart Labels.

   The screen changes to Point mode.

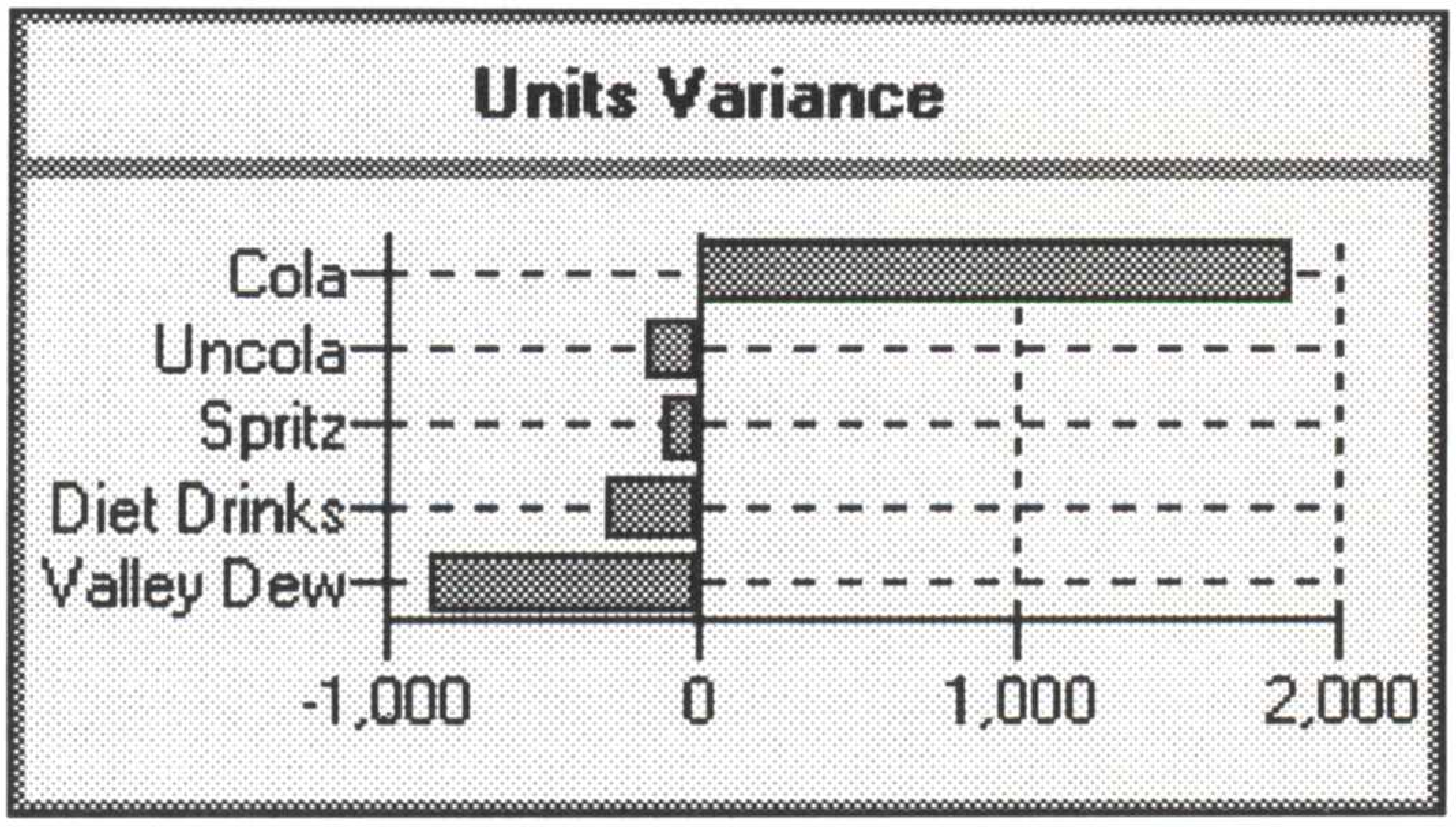


Figure 6-18 A Horizontal Chart

Displaying Legends

Legends identify the data that is charted. You select legends from a document object in Point mode. If you are selecting legends that are printed across a row, you must select each legend individually, as shown in Figure 6-19.

You can suppress a legend by selecting a blank space. For example, if you have three data series, and you want to display legends for the first and third data series, you could select a blank space for the second legend and it would not appear.

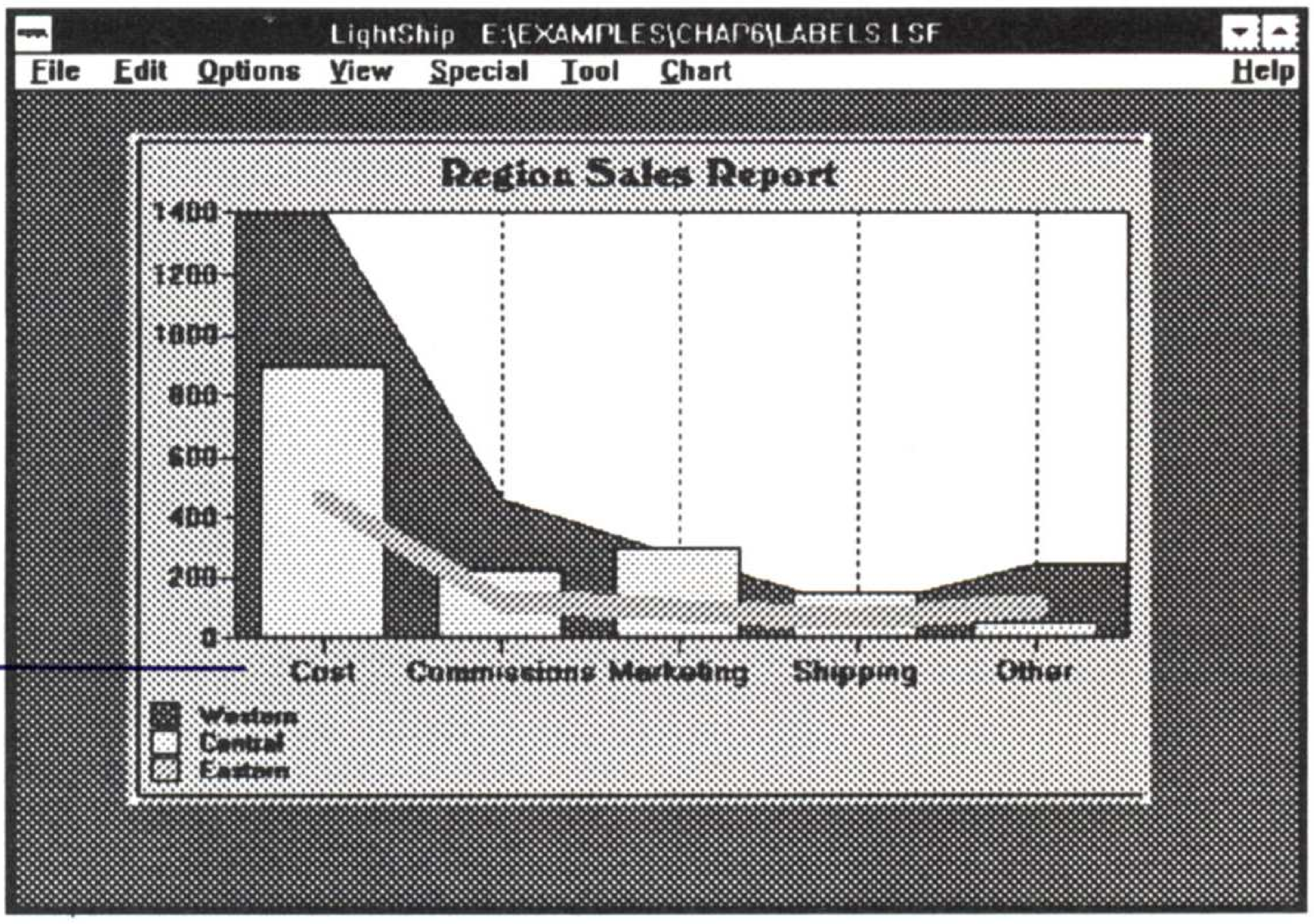
Legends display in a column. To display labels in a row, create draw objects to represent the color swatch and text objects to represent the legend.

■ **To select legends:**

1. Select the chart.

2. Choose Chart Legends.

   The screen changes to Point mode.



Category Labels

Figure 6-24 Displaying Labels

Displaying Labels Selectively

Labels are displayed for each data point by default. However, you can control how often labels are displayed, where they start, and whether or not they appear next to their corresponding data point.

The Label Interval setting on the Chart Category Scale dialog box controls how often labels appear. When the Label Interval is one, every label that you selected in Point mode appears next to its corresponding data point. You can display labels only at certain intervals. For example, you can display a label on every other data point by changing the Label Interval setting to two.

If you display labels at intervals other than one, you can control whether labels appear next to their corresponding data point (and skip the ones in between) or you can display every label you selected (without skipping any). You control this by using the Skip check box. For example, if you are displaying a label at every fourth data point, when Skip is on you

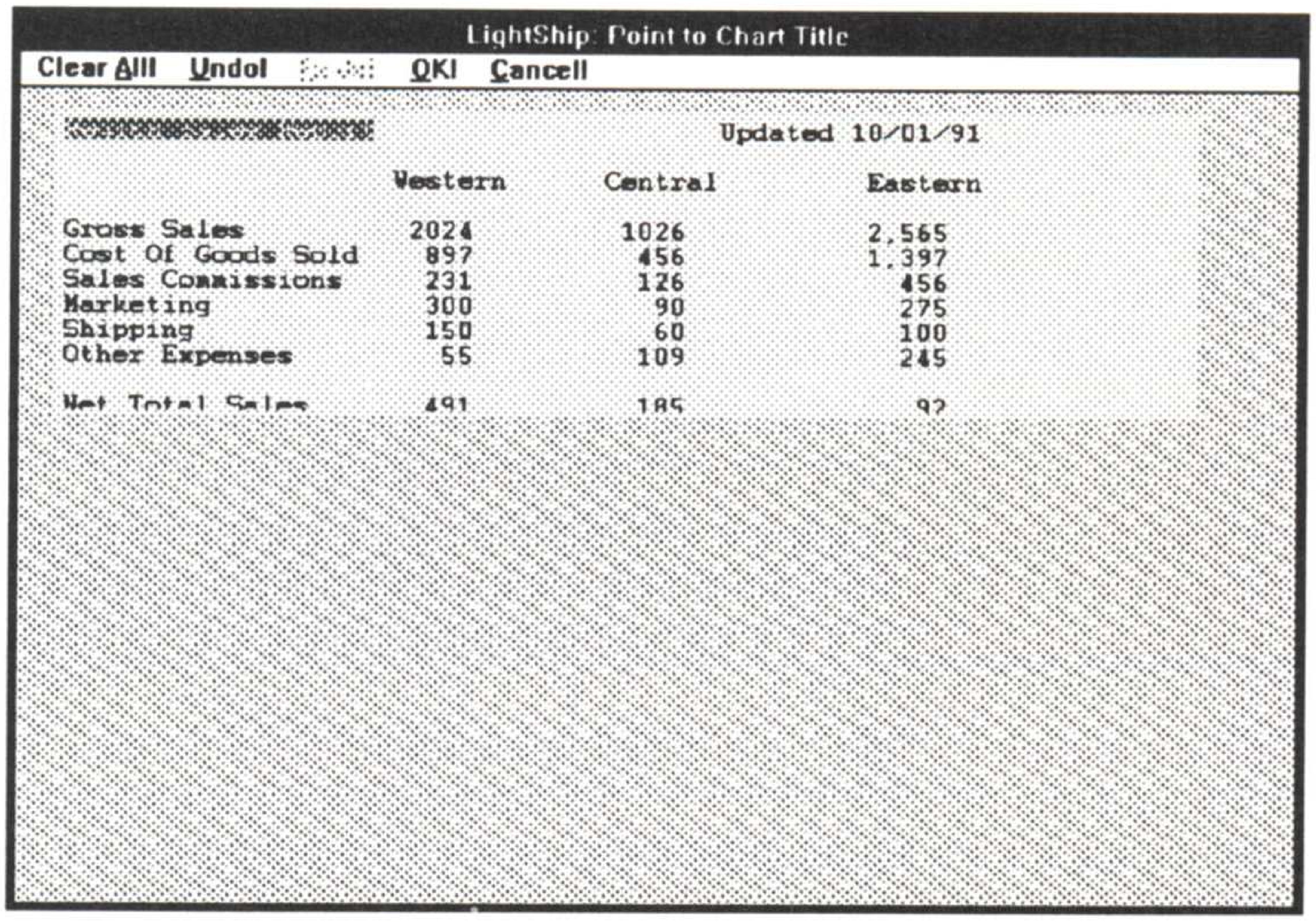
Displaying a Title

You add a title to a chart by selecting text from a document object in Point mode. If no document has the text you want for a title, create a new one and use the User Entry command to enter the text you want. Then make the document object hidden.

To add a title:

1. Select the chart.
2. Choose Chart Title.

   The screen changes to Point mode.



Updated 10/01/91

	Western	Central	Eastern
Gross Sales	2024	1026	2,565
Cost Of Goods Sold	897	456	1,397
Sales Commissions	231	126	456
Marketing	300	90	275
Shipping	150	60	100
Other Expenses	55	109	245
Net Total Sales	491	185	92

Figure 6-21 Selecting a Title

3. Select one line of text for the title.

   The text cannot cross columns.

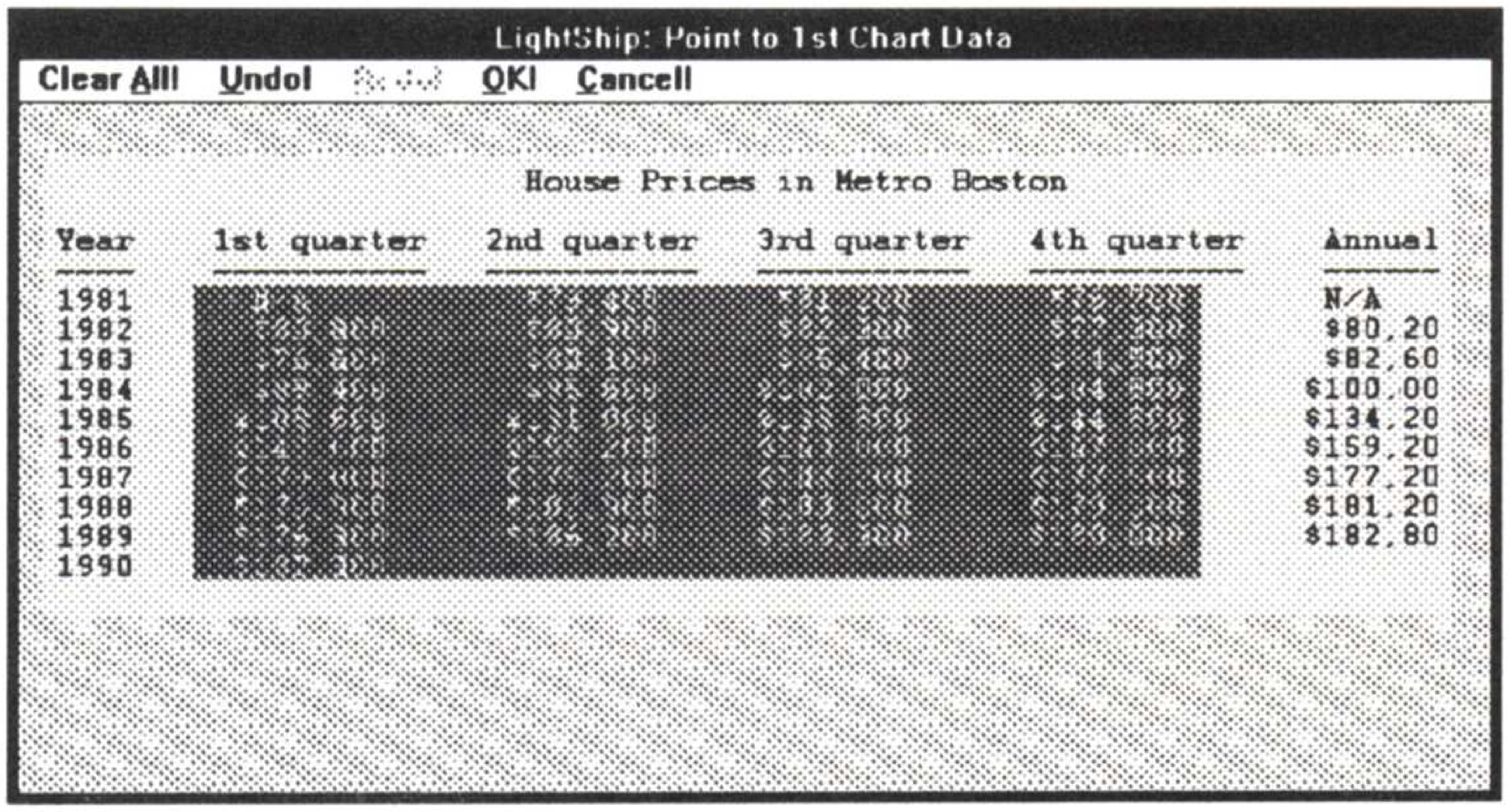
4. Choose OK! on the menu bar.

To select the data point on which the first label appears:

Type a number into the Label Start box. For example, if you type five, the first label will appear next to the fifth data point (if the Skip option is off). If you turn Skip on, the fifth label will appear next to the fifth data point.

Example

The following example illustrates how Label Start and Label Interval interact when the Skip option is off. We selected data from a text file to create a chart of housing prices in Boston.



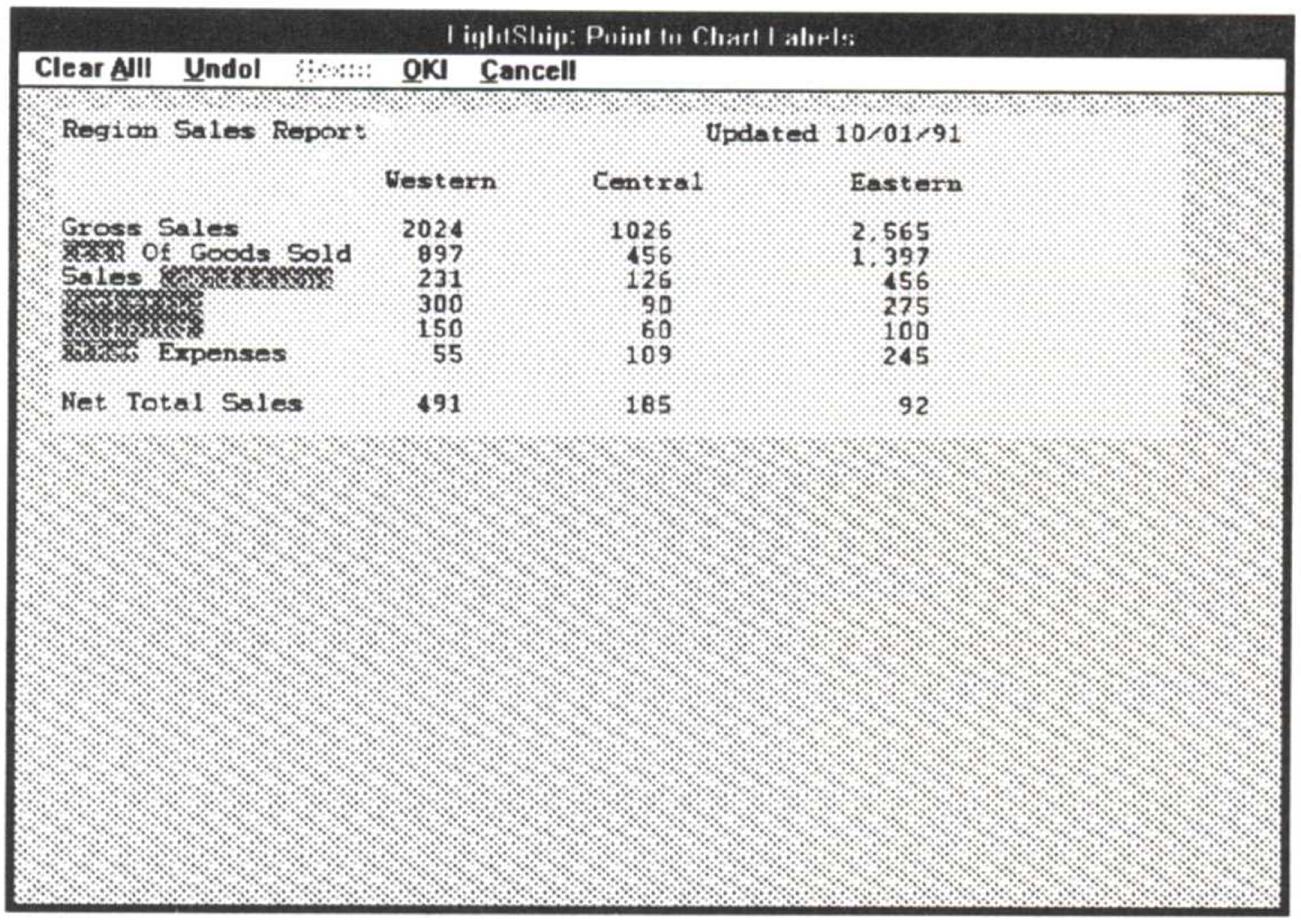
House Prices in Metro Boston

Year	1st quarter	2nd quarter	3rd quarter	4th quarter	Annual
1981	[illegible]	[illegible]	[illegible]	[illegible]	N/A
1982	[illegible]	[illegible]	[illegible]	[illegible]	$80.20
1983	[illegible]	[illegible]	[illegible]	[illegible]	$82.60
1984	[illegible]	[illegible]	[illegible]	[illegible]	$100.00
1985	[illegible]	[illegible]	[illegible]	[illegible]	$134.20
1986	[illegible]	[illegible]	[illegible]	[illegible]	$159.20
1987	[illegible]	[illegible]	[illegible]	[illegible]	$177.20
1988	[illegible]	[illegible]	[illegible]	[illegible]	$181.20
1989	[illegible]	[illegible]	[illegible]	[illegible]	$182.80
1990	[illegible]				

Figure 6-26 Selecting a Data Series

This data file contains about 10 years worth of quarterly data. The first data point is not available.

- We selected the years 1982-1990 from the column on the left side of the text file for our labels.
- We set the Label Interval to four because we only wanted to display one label (the year) for each year.
- We set the Label Start to four because we wanted the first label to start on the first quarter of the second year (the fourth data point).



```
Region Sales Report                         Updated 10/01/91

                        Western      Central        Eastern

Gross Sales              2024         1026           2,565
[illegible] Of Goods Sold    897          456           1,397
Sales [illegible]          231          126             456
[illegible]                 300           90             275
[illegible]                 150           60             100
[illegible] Expenses          55          109             245

Net Total Sales           491          185              92
```

Figure 6-23 Selecting Labels

3. Select the labels in the order in which you want them to appear.

   If Document Column Delimiter None is on and you want to select multiple labels across a row, you must select each label individually.

4. Choose OK! on the menu bar.

- Where major numbers, tickmarks, and grid lines appear
- Where minor tickmarks and grid lines appear
- Where the crosses line appears
- Numeric formatting

LightShip calculates all of these settings automatically based on the numbers and the size of the chart, but you can change any of them.

Changing a Numeric Scale Setting

■ **To change a numeric scale setting:**

Choose Chart Numeric Scale.

A dialog box appears.

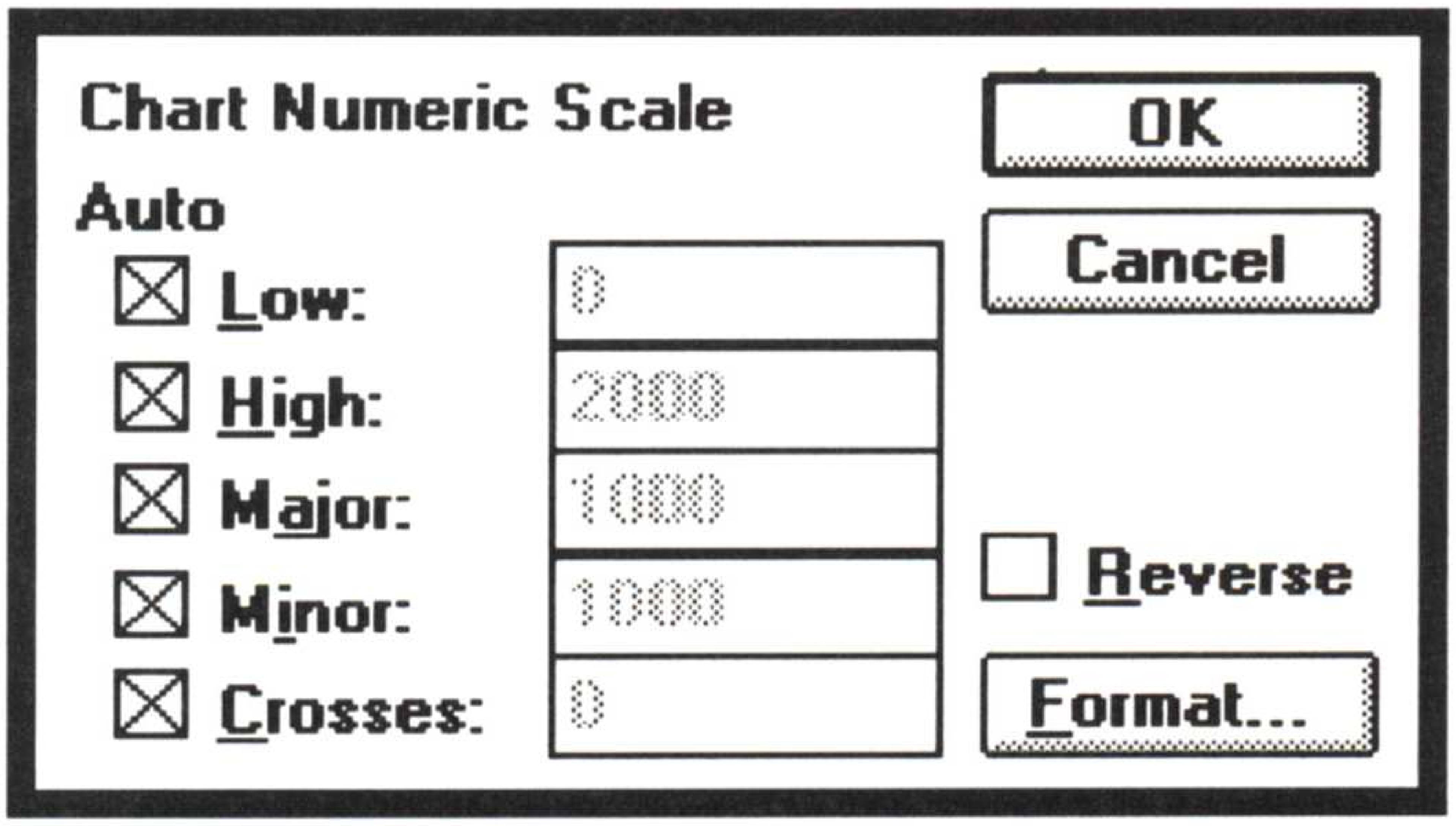


Chart Numeric Scale

Auto

☒ Low: 0

☒ High: 2000

☒ Major: 1000

☒ Minor: 1000

☒ Crosses: 0

☐ Reverse

Figure 6-28 Setting the Numeric Scale

When the settings on the left are turned on, the text boxes to their right display the calculated settings and are not available for data entry. To enter your own value, turn off the check box. You will then be able to type a value.

Setting Low and High Values

■ **To enter a low value:**

Type a number in the Low box.

display every fourth label. When Skip is off you display each label sequentially at every fourth data point.

You can also control where labels begin by using the Label Start option. This option controls which data point the first label is displayed next to. The label that appears is controlled by the Skip option.

Changing a Label Interval or Label Start

■ **To change a label interval or start:**

Choose Chart Category Scale.

A dialog box appears.

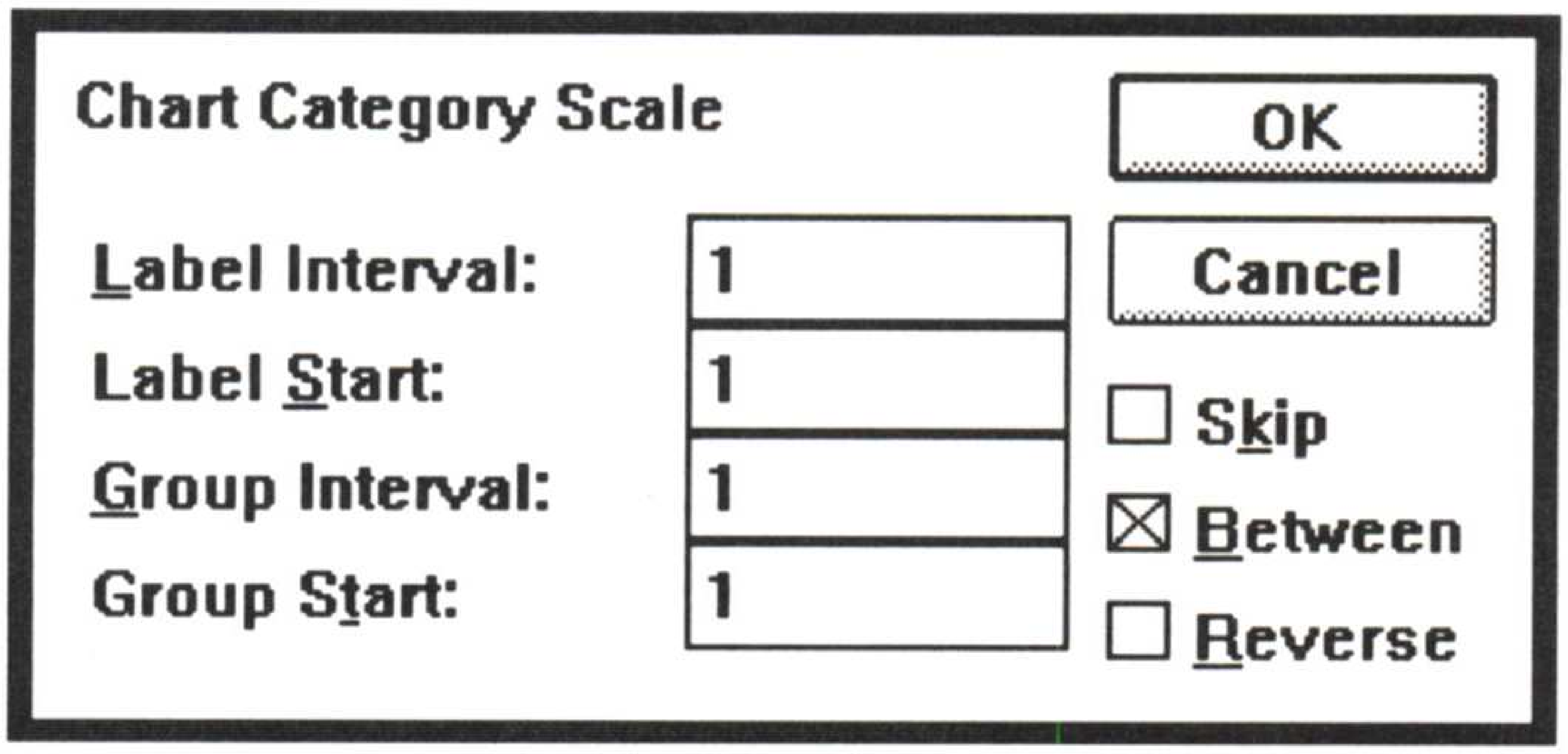


Chart Category Scale

Label Interval: 1
Label Start: 1
Group Interval: 1
Group Start: 1

☐ Skip
☒ Between
☐ Reverse

Figure 6-25 Specifying Label Intervals

■ **To change the label interval:**

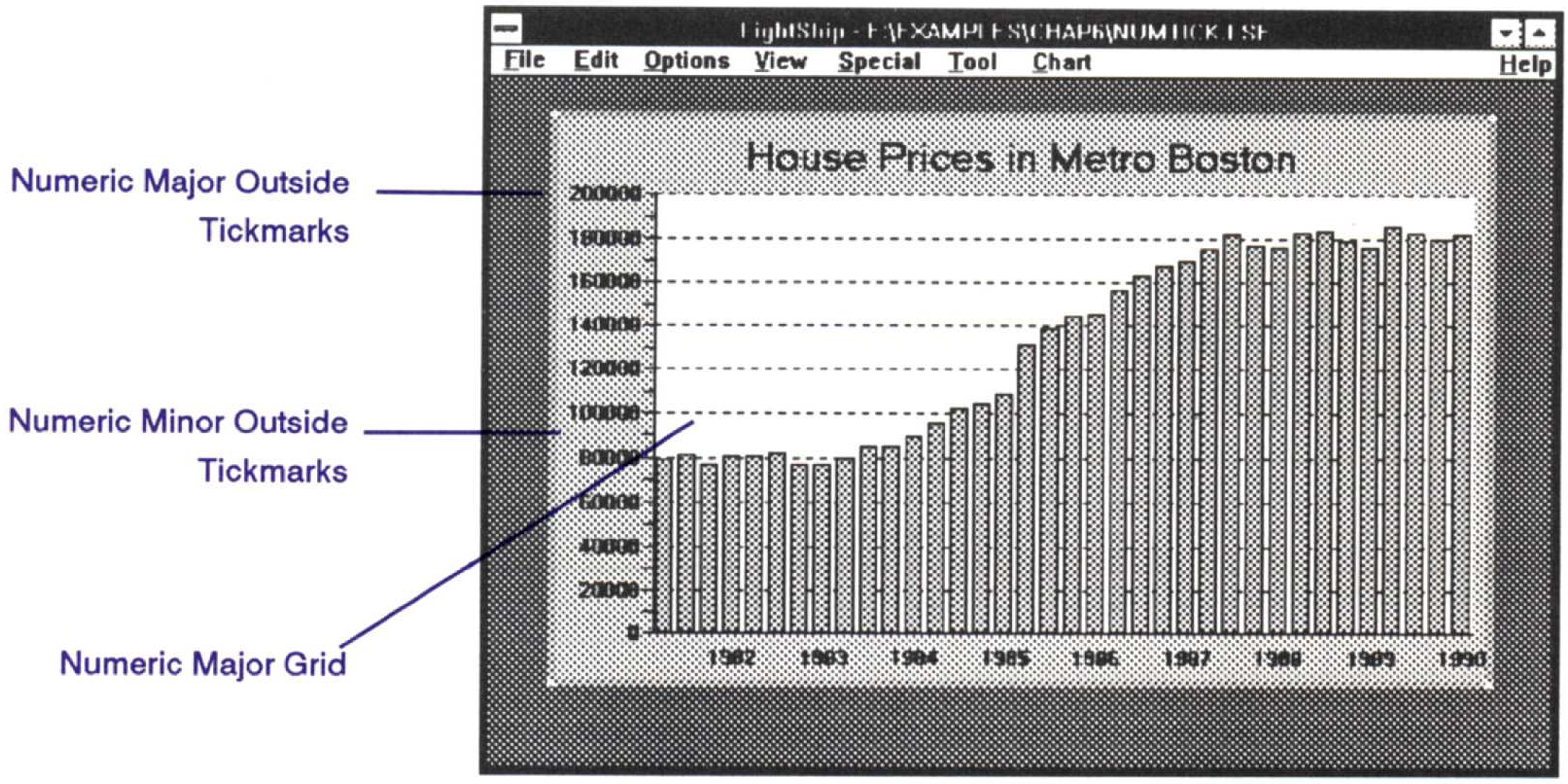
Type a number in the Label Interval box. For example, to display a label on every other point, set the label interval to two.

■ **To make the labels appear next to their associated data point:**

Turn Skip on.

5. Choose OK.

Figure 6-29 shows a chart with both major and minor tickmarks, as well as a major numeric grid. The major tickmarks are set to 20,000 and the minor tickmarks are set to 10,000.



Numeric Major Outside Tickmarks

Numeric Minor Outside Tickmarks

Numeric Major Grid

Figure 6-29 Numeric Major and Minor Tickmarks and Major Grid

Specifying the Crosses Line

The crosses line has a number that represents a base line for the data points you are charting. The crosses line is set to zero by default.

On vertical charts, if you set the crosses line to a number other than zero, data points greater than the crosses line are drawn above it and data points less than the crosses line are drawn below it.

On horizontal charts, if you set the crosses line to a number other than zero, data points greater than the crosses line are drawn to the right and data points less than the crosses line are drawn to the left.

- We left the Skip option off because we wanted to show every year (not every fourth year). Figure 6-27 shows the chart.

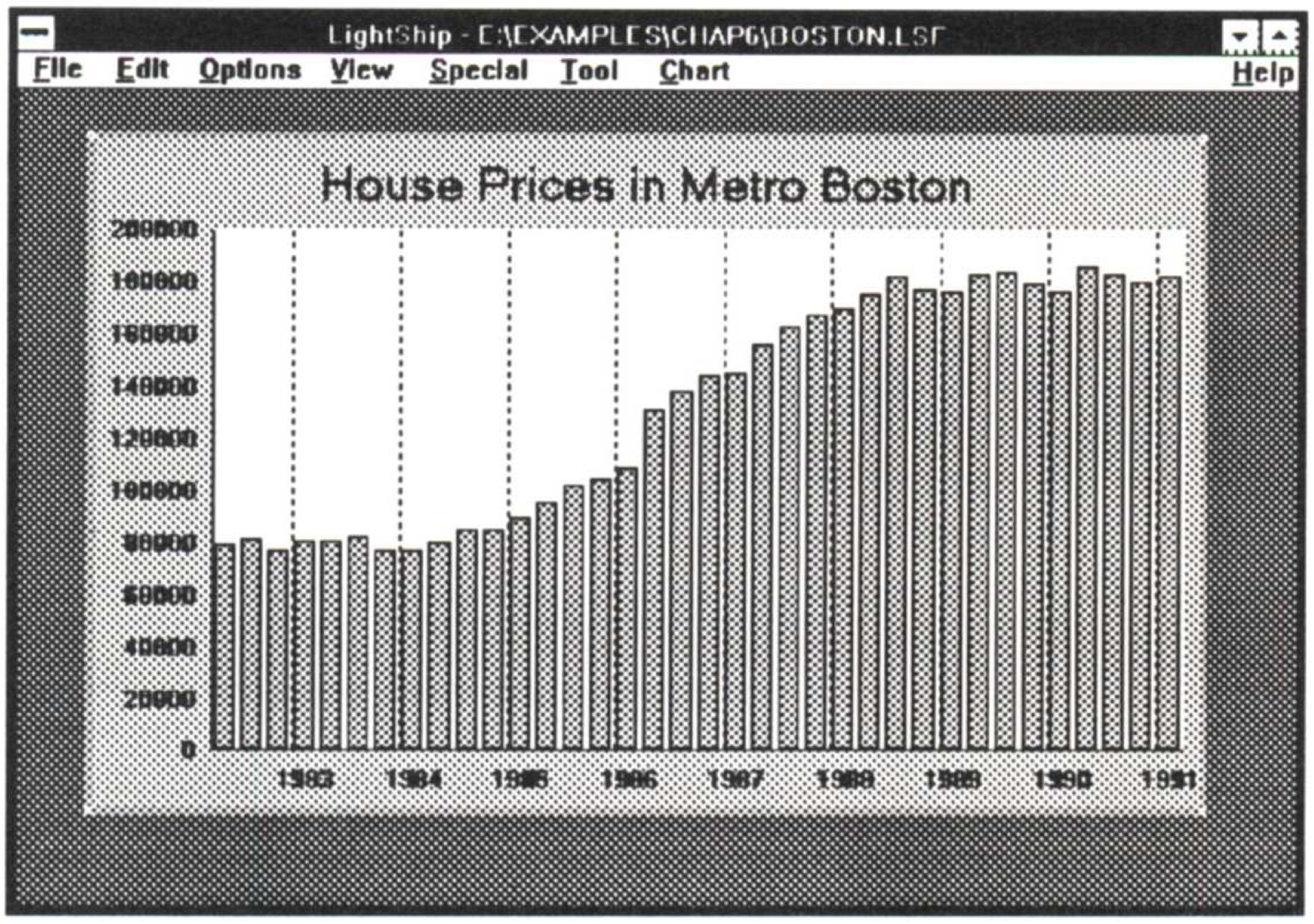


Figure 6-27 Displaying Labels at Intervals

Setting the Scale

Charts have two kinds of scales, numeric and category. The *category scale* is made up of text labels, such as time or product names. The *numeric scale* is linear. For vertical charts, the numeric scale is usually along the left vertical axis and the category scale is along the bottom horizontal axis.

Setting the Numeric Scale

The numeric scale settings affect:

- The lowest value charted
- The highest value charted

Reversing the Scale

You can reverse the numeric scale so that it goes from the highest number to the lowest number.

To reverse the numeric scale:

Turn on the Reverse check box on the Chart Numeric Scale dialog box.

Setting the Category Scale

The category scale affects:

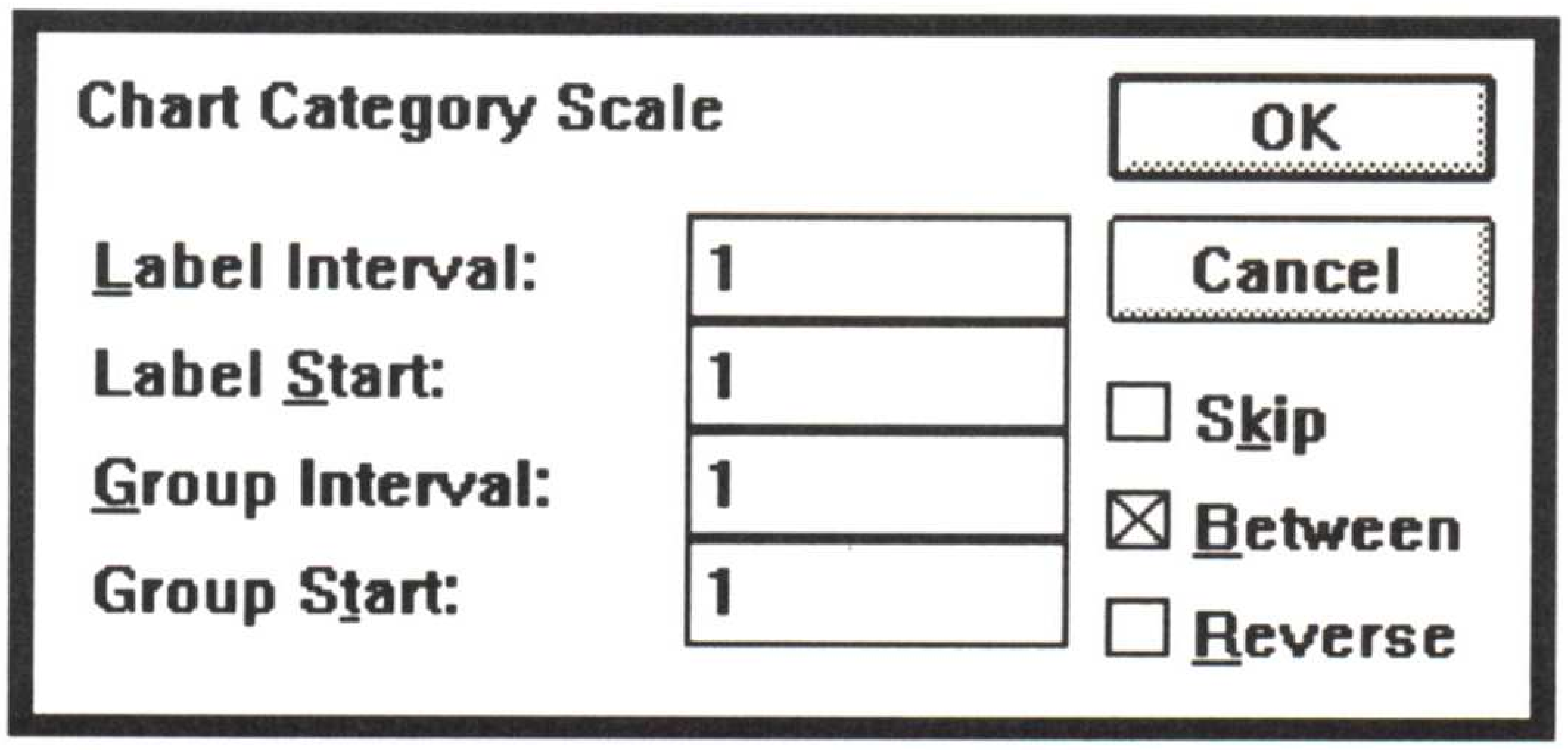
- Where and how the category labels are displayed. For more information about how labels are displayed, see "Displaying Labels."
- Where and how grid lines and tickmarks are displayed.

This section discusses how to display grid lines and tickmarks along the category scale.

To change a category scale setting:

Choose Chart Category Scale.

A dialog box appears.



Label Interval: 1
Label Start: 1
Group Interval: 1
Group Start: 1
☐ Skip
☒ Between
☐ Reverse

Figure 6-31 Changing the Category Scale Settings

■ **To enter a high value:**

Type a number in the High box.

Specifying Major and Minor Settings

The Major setting controls where the numbers are displayed along the numeric scale. It also controls where the major tickmarks and grid lines are displayed, if they are colored.

The Minor setting does not display a number, but it allows you to display a second set of tickmarks and grid lines. By default, the Minor setting is the same as the Major setting. Minor tickmarks and grid lines must also be colored, if they are to display.

■ **To specify the major setting:**

Type a number in the Major text box.

■ **To specify major tickmarks and grid lines:**

1. Select the chart.
2. Choose Chart Color or press F5.
3. Select Numeric Major Inside Ticks, Numeric Major Outside Ticks, or Numeric Major Grid.
4. Select a color.
5. Choose OK.

■ **To specify minor tickmarks and grid lines:**

1. Select the chart.
2. Choose Chart Color or press F5.
3. Select Numeric Minor Inside Ticks, Numeric Minor Outside Ticks, or Numeric Minor Grid.
4. Select a color.

This number corresponds to the data point at which the tickmark or grid line will appear.

Specifying an Interval

- **To specify an interval:**

Type a number in the Label Interval or Group Interval box in the Chart Category Scale dialog box.

The number represents the interval at which the tickmarks or grid lines will appear.

Where Grids and Ticks Appear on the Data Point

By default, grid lines and tickmarks appear in the middle of a data point.

- **To make a group grid or group tickmark display between data points:**

Turn on Between.

Example of Group Start and Group Interval

The following example illustrates how Group Start and Group Interval work. This chart adds an outside tickmark and a grid line for every year on the chart shown in Figure 6-33.

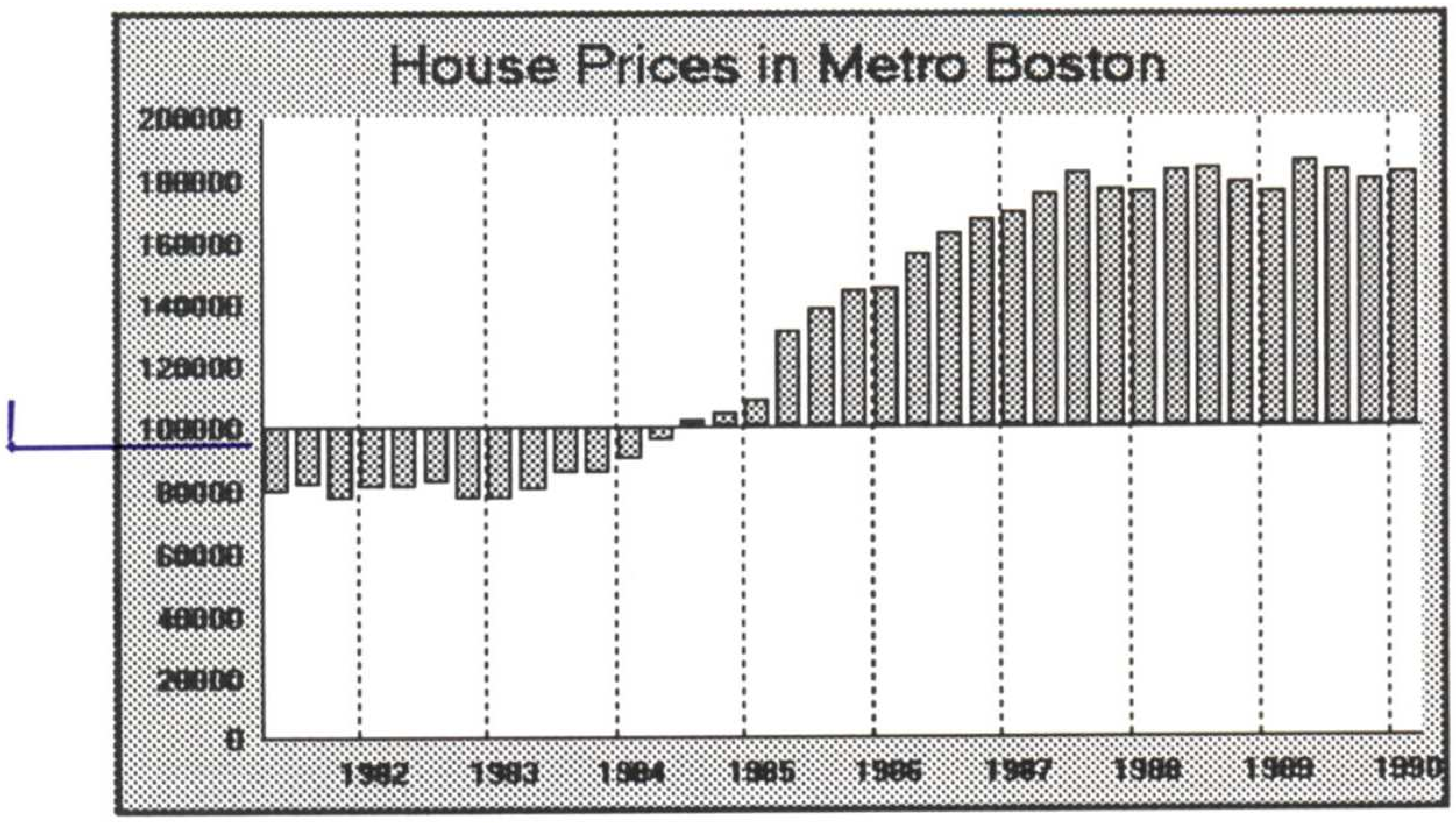
This chart has both Group Start and Group Interval set to four. As long as the grid and tickmarks are colored, this setting draws a grid line and a tickmark starting at the fourth data point and draws a grid line every fourth data point after that.

If you reverse the numeric scale, data points greater that the crosses line are drawn below it, and data points less than the crosses line are drawn above it.

- **To enter a number for the crosses line:**

  Type a number in the Crosses text box in the Chart Numeric Scale dialog box.

Figure 6-30 shows a chart with the crosses line set to 100,000.



Crosses Line

Figure 6-30 The Crosses Line

Formatting Numbers

- **To change the way numbers are formatted on the numeric scale:**

  Choose the Format button on the Chart Numeric Scale dialog box.

  The Numeric Format dialog box appears. This dialog box is the same as the one used for formatting numbers in document objects. For information on formatting numbers, see *Chapter 4: Displaying Data*.

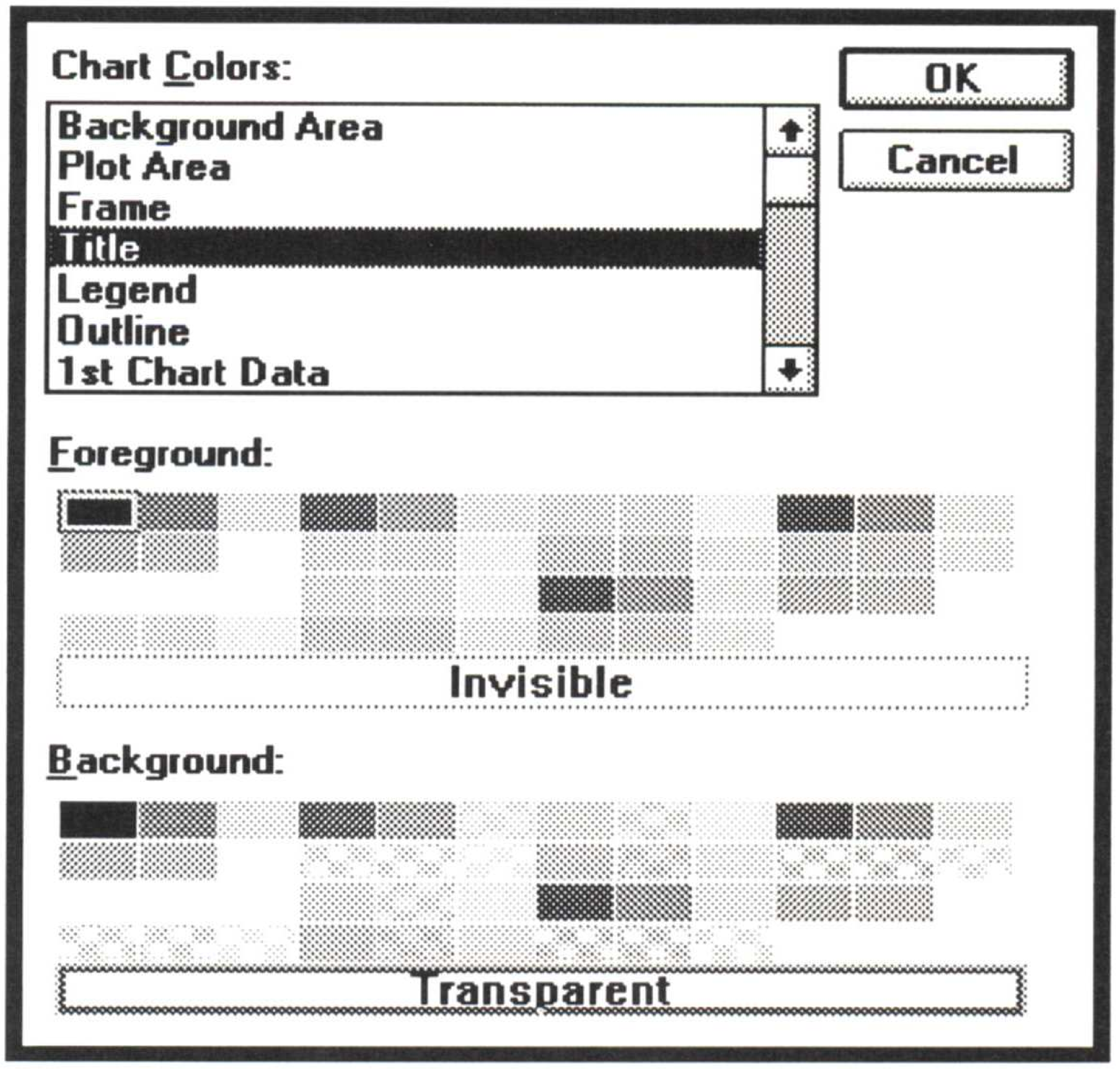


Figure 6-34 Selecting Items to Color

2. Choose the chart item you want to color.

3. Select a color.

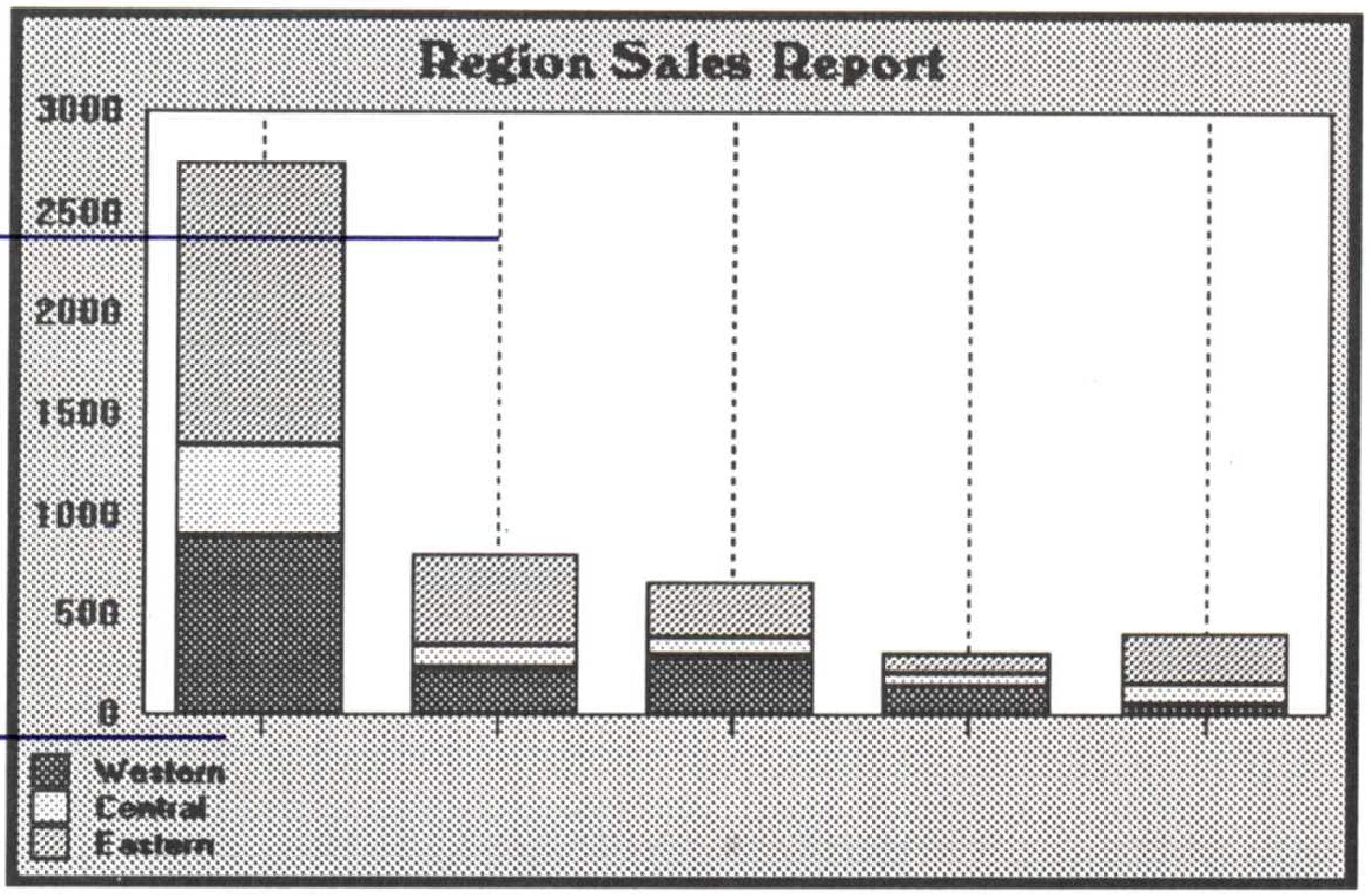
   Select Invisible to remove the display of a chart foreground item.

   The Background colors are available only when you select a text chart item so that you can specify a background color as well as a text color. Select Transparent to make a chart item background transparent so that whatever is behind it shows through.

4. You can select as many chart items and colors as you want before choosing OK.

Displaying Grid Lines and Tickmarks

You display a grid and tickmarks by coloring them. You can display two sets of tickmarks and grid lines on the category axis. These are called *label* and *group*. Label tickmarks and grid lines are controlled by the Label Start and Label Interval options on the Category Scale dialog box. Group tickmarks and grid lines are controlled by the Group Start and Group Interval options on the Category Scale dialog box.



Category Label Grid

Category Label Outside Tickmarks

Figure 6-32 Displaying Tickmarks and Grid Lines

■ **To display grid lines and tickmarks:**

1. Choose Chart Color.
2. Select the grid or tickmark that you want to appear on your chart.
3. Select a color.
4. Choose OK.

Specifying a Start

■ **To specify where tickmarks or grid lines start:**

1. Type a number in the Label Start or Group Start box in the Chart Category Scale dialog box.

The Chart Menu

When you create or select a chart object, the Chart menu appears on the menu bar. This menu allows you to:

- Add, change, or delete a data series.
- Enter a title, labels, and legends.
- Change the chart type.
- Specify the numeric and category scales.
- Add tickmarks and grid lines.
- Color the parts of a chart and change the fonts of chart text.

The Parts of a Chart

Figure 6-2 shows the parts of a chart object.

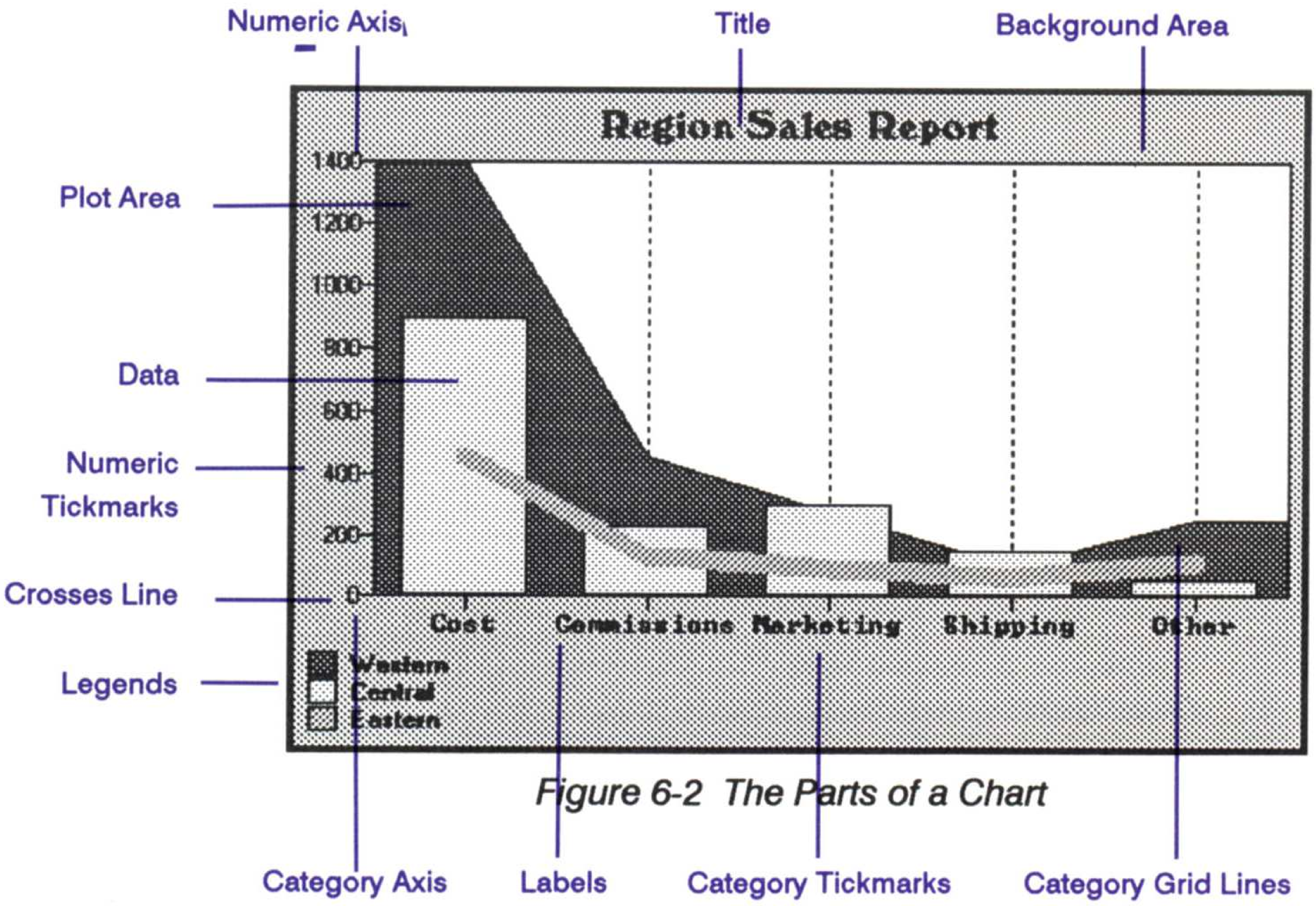


Figure 6-2 The Parts of a Chart

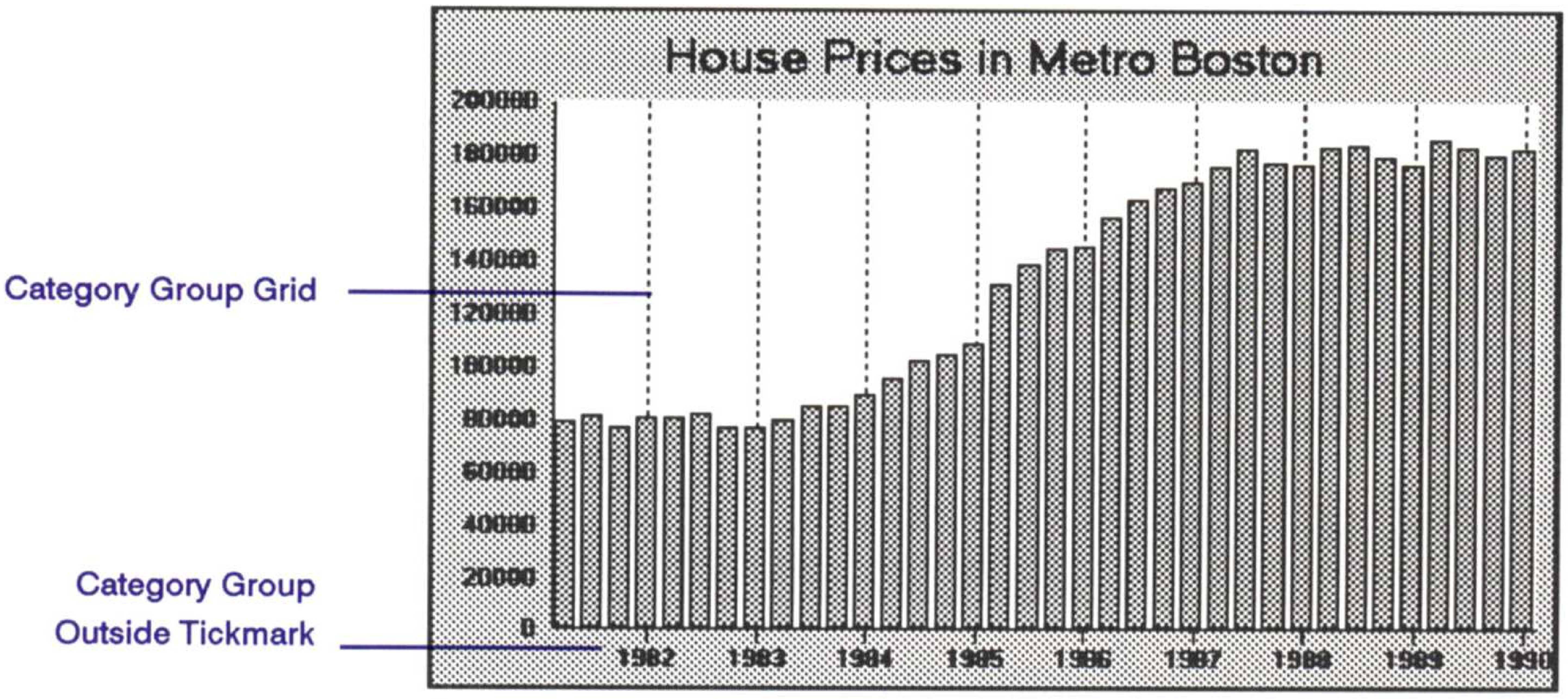


Figure 6-33 Adding a Category Group Grid and Category Label Outside Tickmarks

Reversing the Scale

You can reverse the category scale so that data points and labels display from last to first.

To reverse the category scale:

Turn on the Reverse check box.

Coloring a Chart

For information about coloring specific items in a chart and changing the default colors for a chart, see the *LightShip Reference Guide*.

To color the different items of a chart:

1. Choose Chart Color.

   A dialog box appears.

Tickmarks

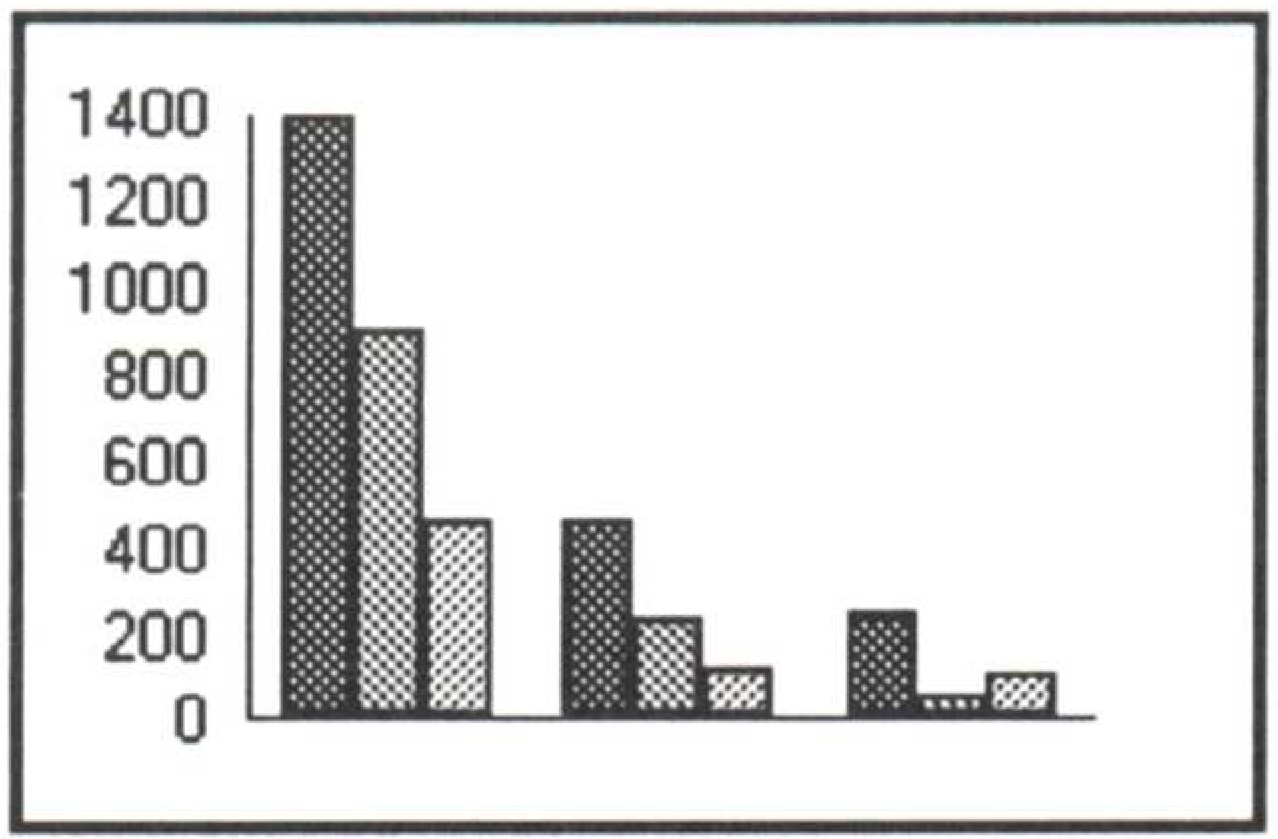
Tickmarks are short lines that mark the numeric and category scale on an axis.

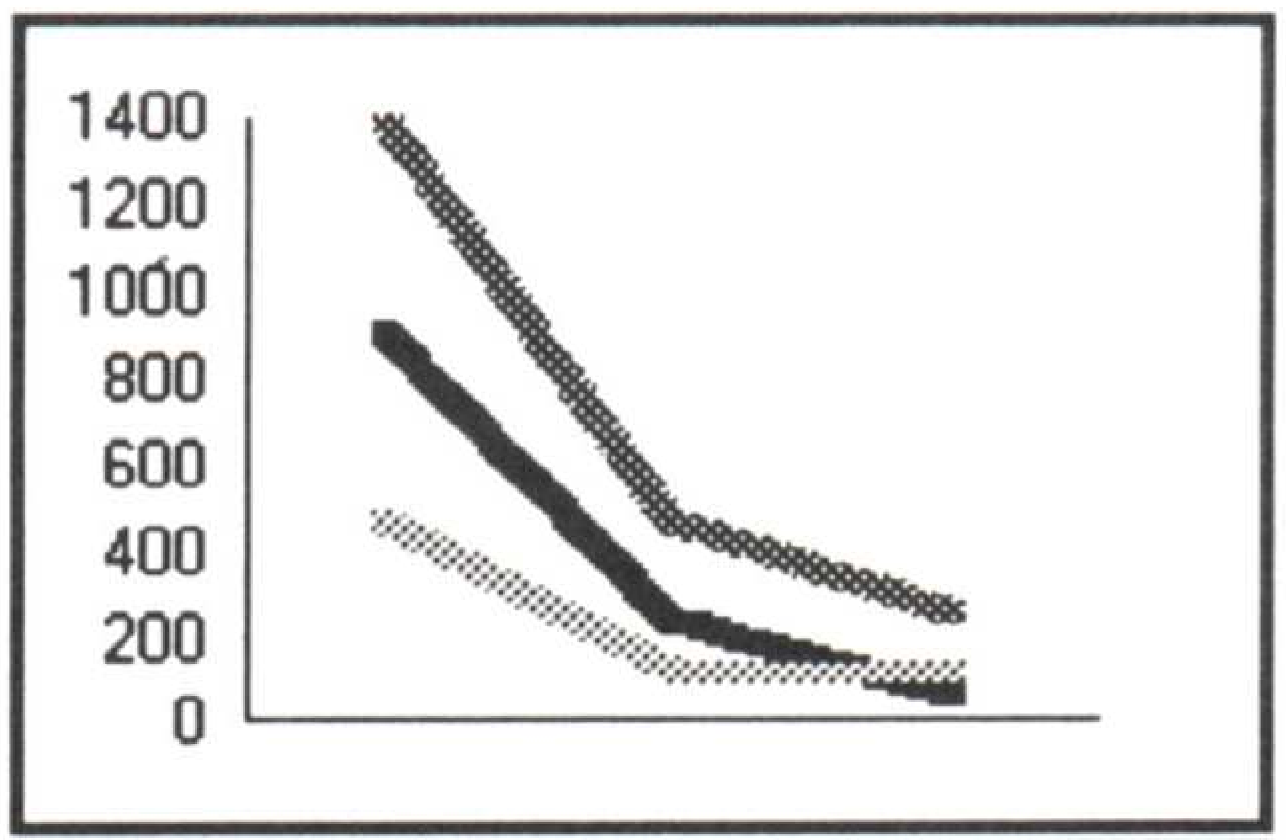
Grid Lines

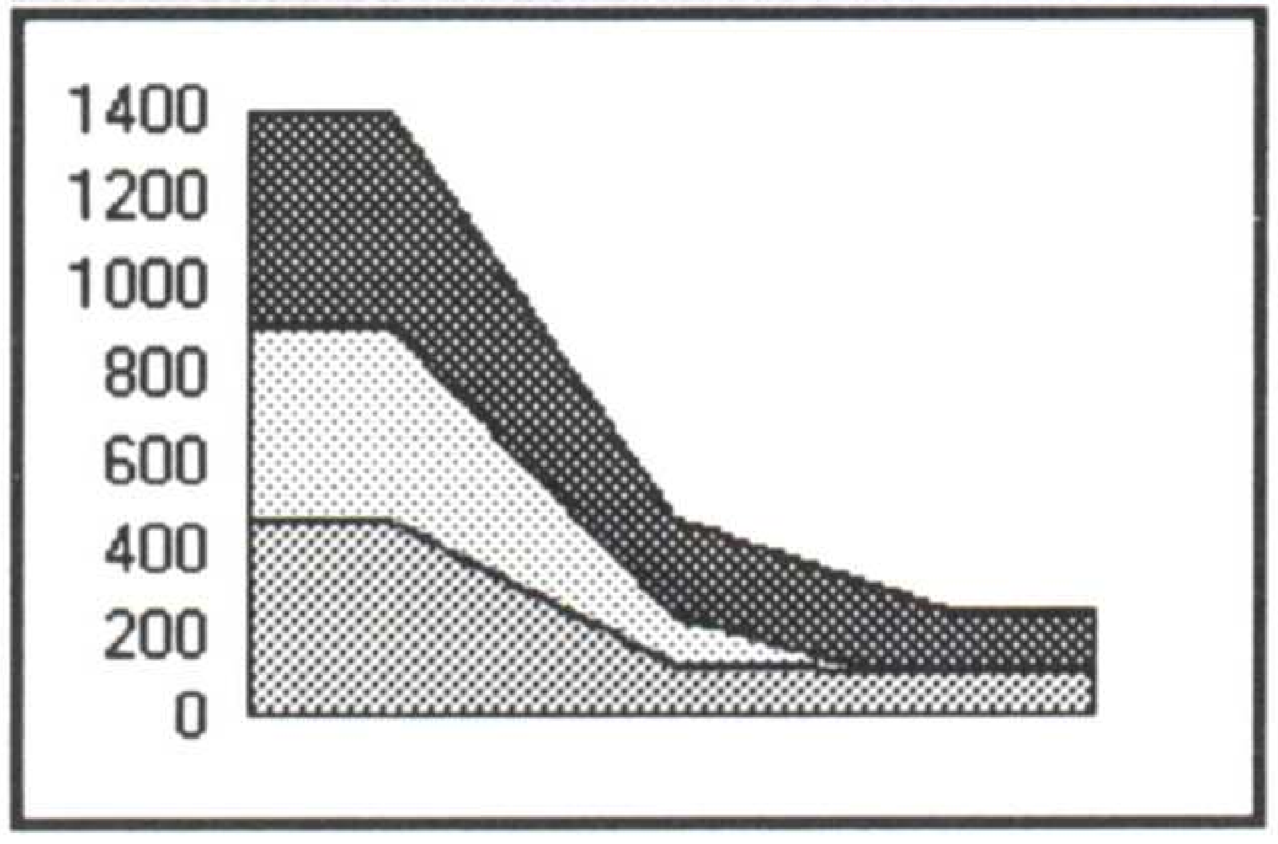
Grid lines are dotted lines that appear within the plot area that mark the numeric and category scale.

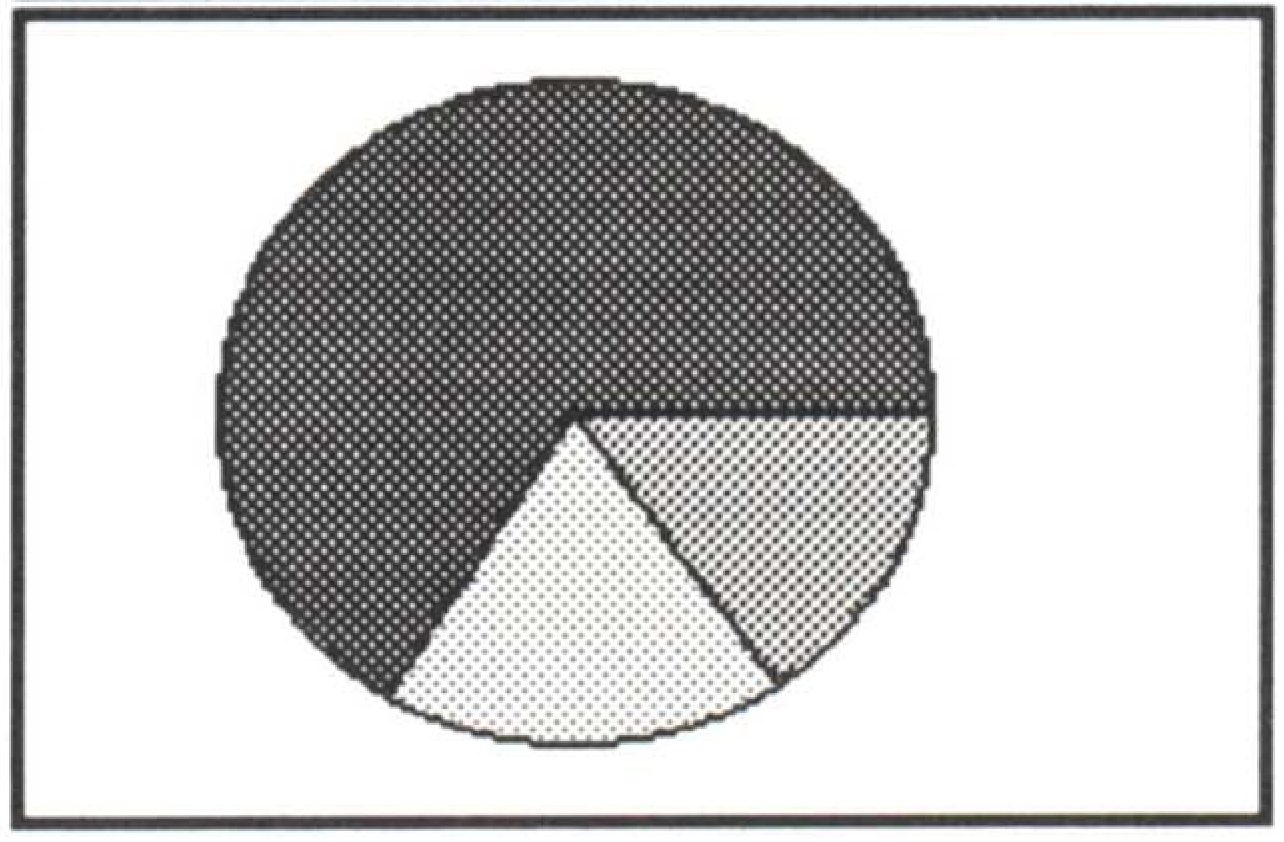
Chart Types

LightShip has four types of charts to choose from: bar, line, area, and pie.


Bar


Line


Area


Pie

Choosing a Font for Chart Text

■ **To choose a font for a text item on a chart:**

1. Choose Chart Font.

   A dialog box appears.

☞ Double-click on the chart item to go directly to the Fonts dialog box.

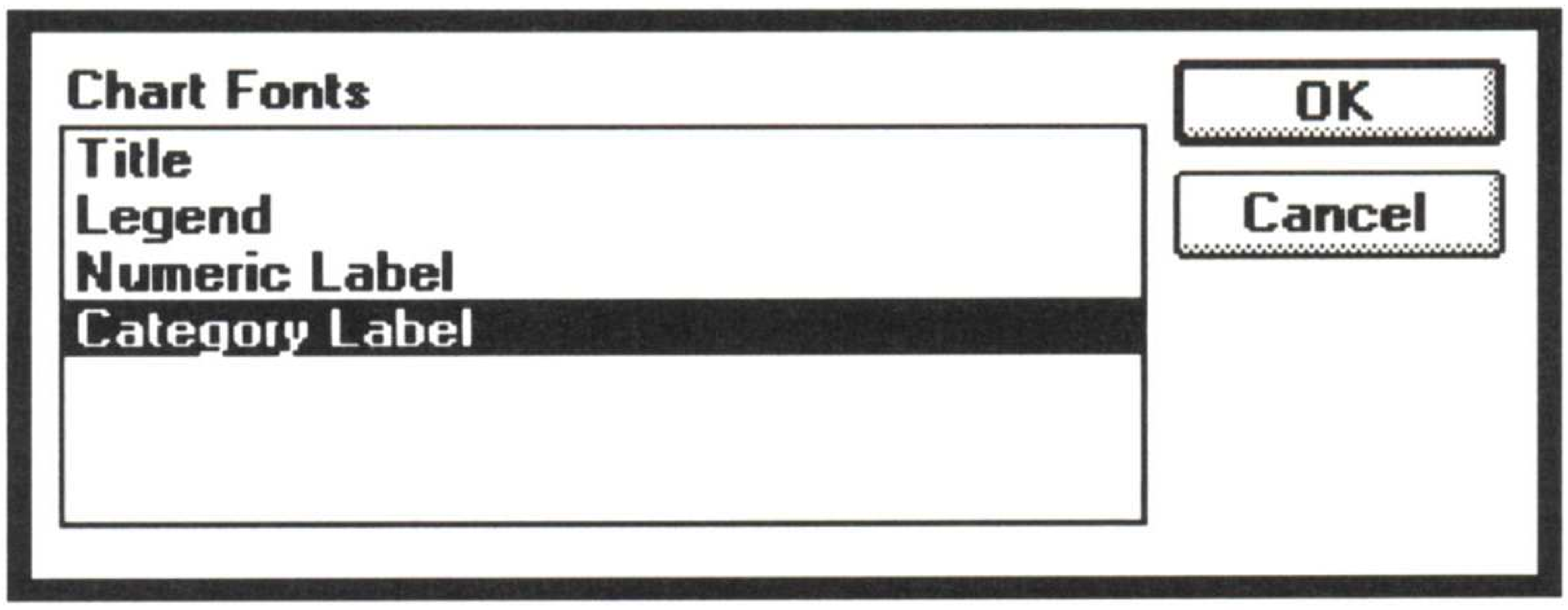


Figure 6-35 Choosing a Font

2. Choose the text item whose font you want to change.

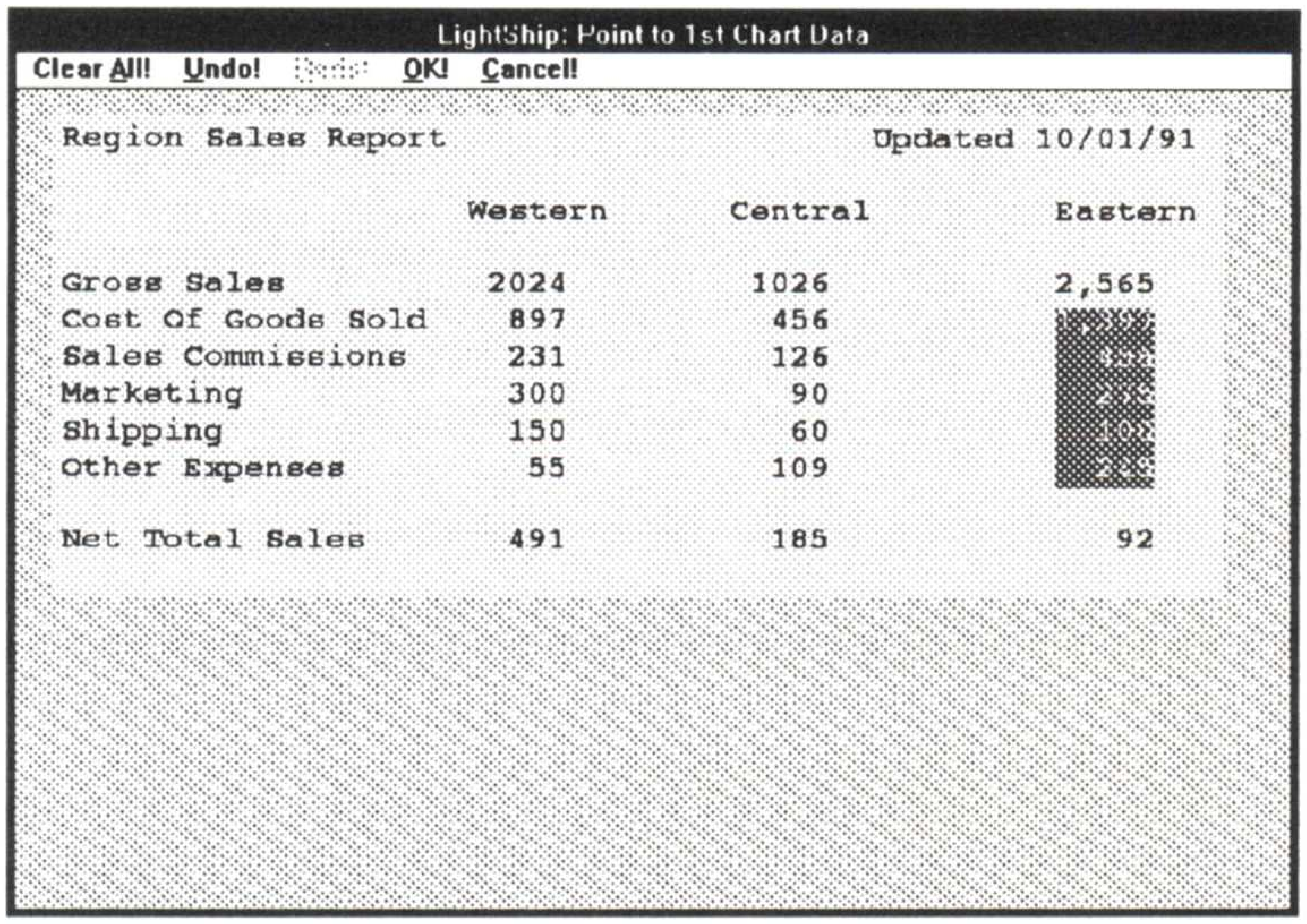
3. Choose OK.

   The Fonts dialog box appears. This dialog box is the same as the one used for document object font selection. For more information on choosing fonts, see "Choosing a Font" in *Chapter 4: Displaying Data*.

4. Choose the font, point size, and style.

5. Choose OK.

* * *



Region Sales Report Updated 10/01/91

	Western	Central	Eastern
Gross Sales	2024	1026	2,565
Cost Of Goods Sold	897	456	[illegible]
Sales Commissions	231	126	[illegible]
Marketing	300	90	[illegible]
Shipping	150	60	[illegible]
Other Expenses	55	109	[illegible]
Net Total Sales	491	185	92

Figure 6-3 Selecting a Data Series to Chart

5. Choose OK! on the menu bar.

   The first data series is charted in the object.

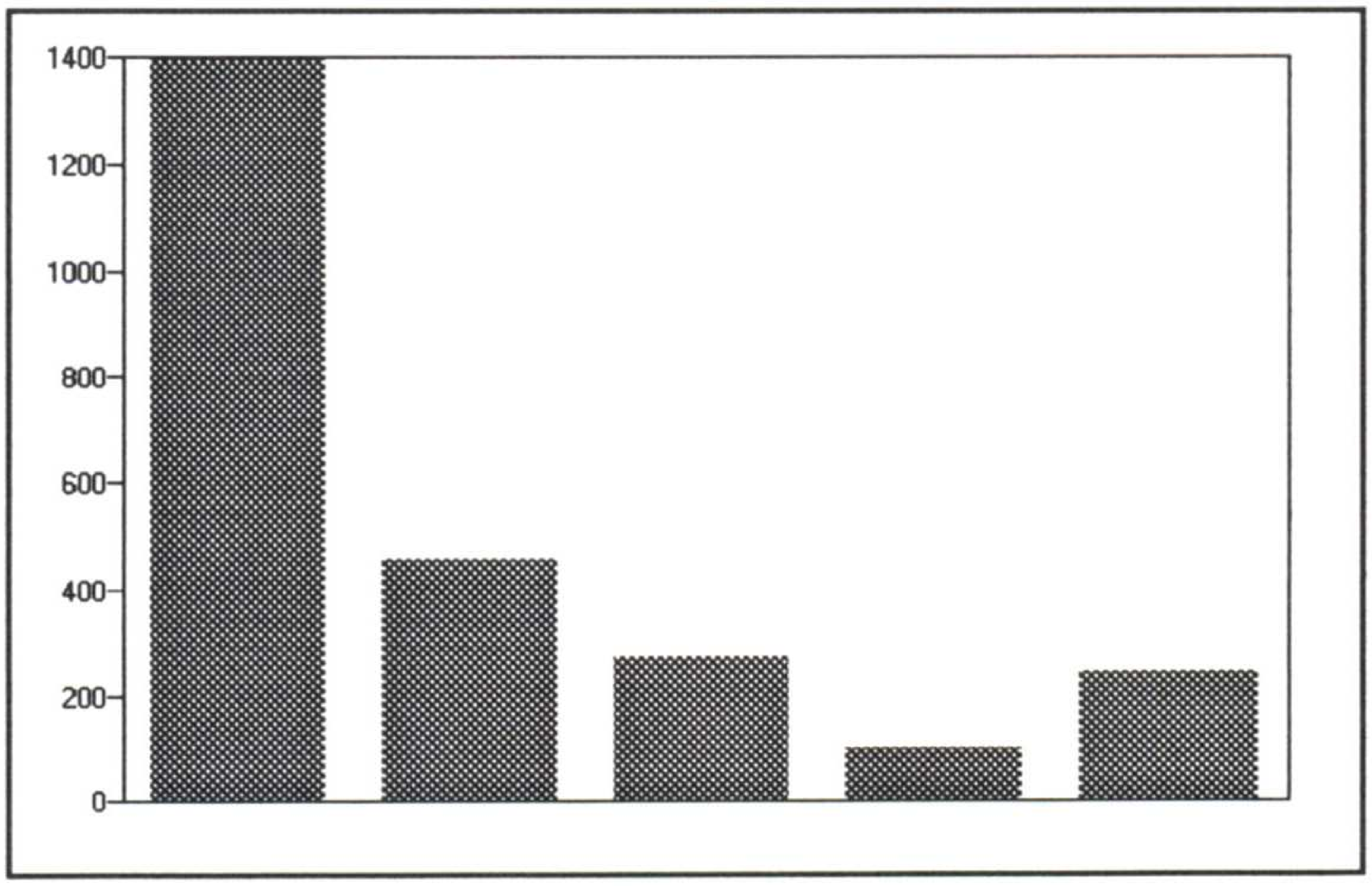


Figure 6-4 The First Data Series is Charted

Data	The data that you chart comes from document objects. You select the data in Point mode. Each set of data that you select to chart is called a *data series*. Each number in a series is called a *data point*. You can chart up to eight data series in one chart.
Title	The title is the heading at the top of the chart.
Label	A label is the text associated with each data point.
Legend	The legend identifies the data series being charted. It is displayed with a color key on the chart.
Plot Area	The plot area is the inner rectangle in which the data is charted.
Background Area	The background area is the area around the plot area.
Numeric Axis	The numeric axis determines the type and range of measurement, usually on the vertical axis (y-axis). For horizontal charts, the numeric axis is on the horizontal axis (x-axis).
Category Axis	The category axis labels the data being charted, usually along the horizontal axis (x-axis). For horizontal charts, the category axis is on the vertical axis (y-axis).
Crosses Line	The crosses line has a number that represents a base line for the data. By default, it is set to zero and shares the same line as the category axis. On default charts, if you set the crosses line to a number other than zero, numbers greater than the crosses line are charted above it; numbers less than the crosses line are charted below it.

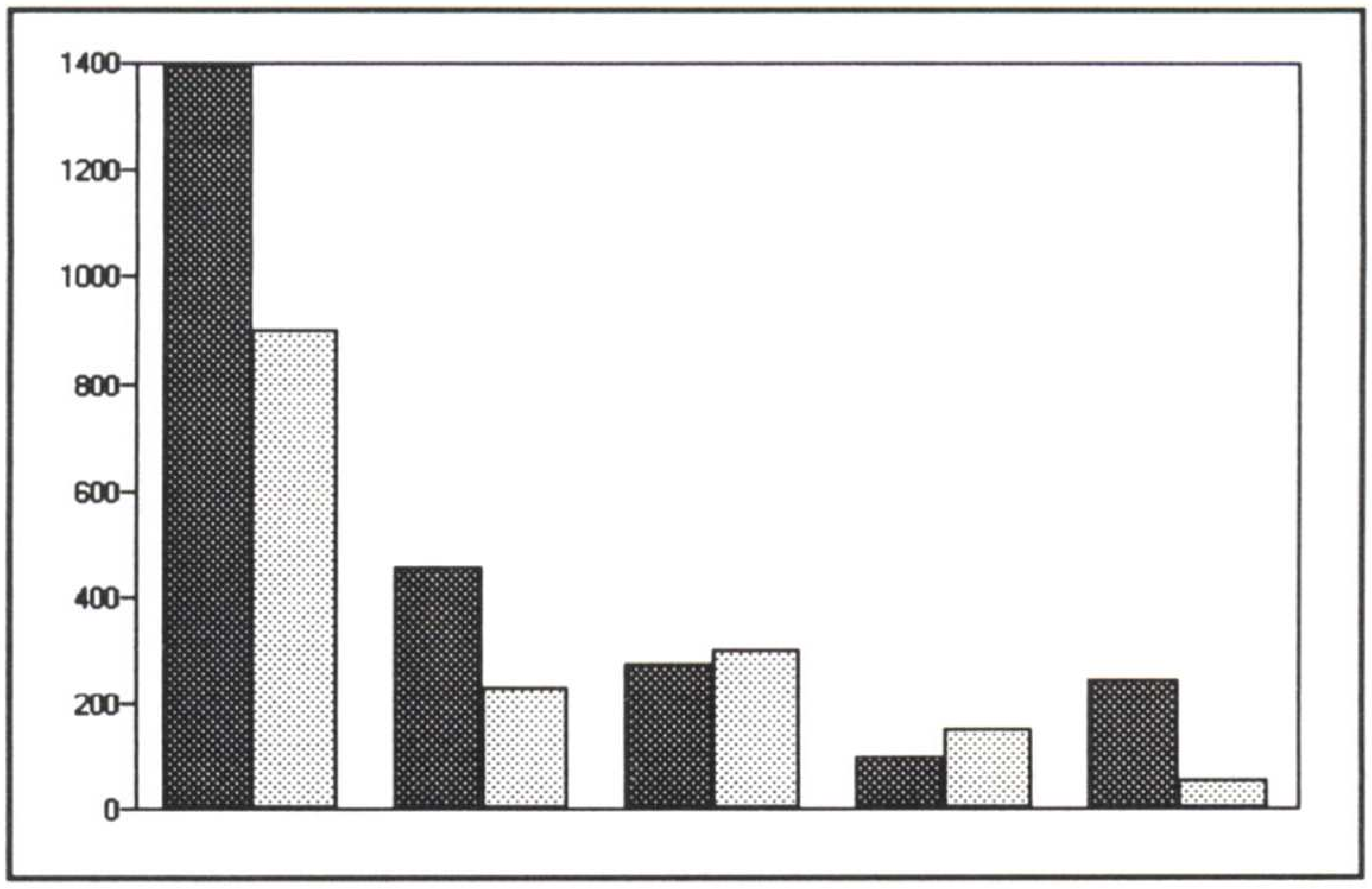


Figure 6-6 The Second Data Series is Charted

Changing a Data Series

When you delete a data series from a chart, the numbers of subsequent data series move up in number. For example, if you delete the 3rd data series, the 4th data series becomes the 3rd data series.

■ **To change or delete a data series from a chart:**

1. Choose Chart Data and the number of the series you want to change.

   The Point mode screen appears.

   ■ **To change a data series:**

   Change the data items on the Point mode screen by using the Undo!, Redo!, or Clear All! options on the menu bar.

   You can add more items to the data series by selecting them.

Creating a Chart

Because LightShip charts data from document objects, you must have at least one document object on the screen before creating a chart. You select each data series in Point mode. You can select individual items and multiple ranges for each data series. LightShip charts exactly what you select, so be careful about selecting blank cells, which LightShip treats as zeros. You can only select one data series at a time. You must exit and return to Point mode for each data series that you chart.

The default chart is a bar chart. To change a chart type, see "Changing the Chart Type of a Data Series."

■ **To create a chart:**

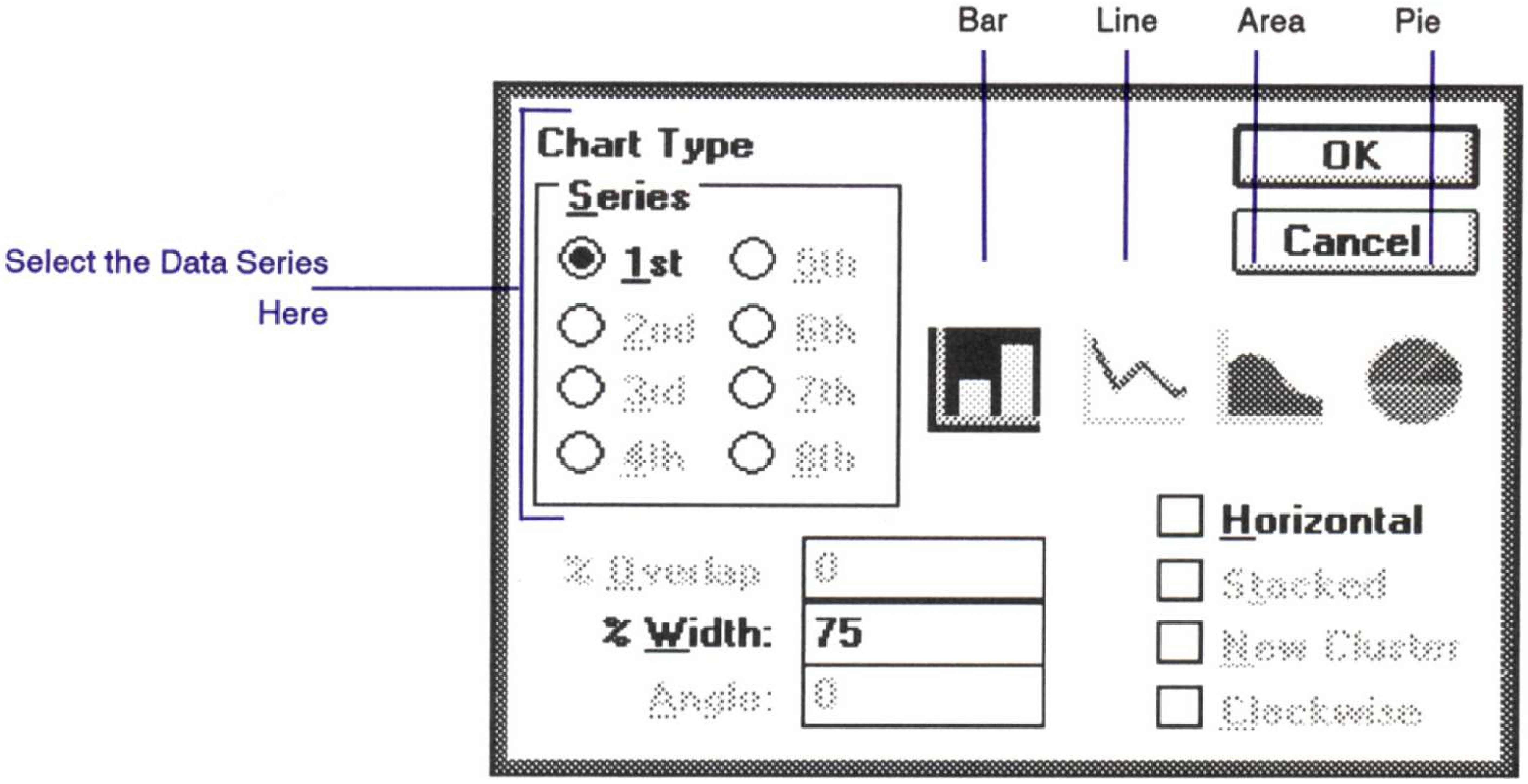
1. Choose Tool Chart.

2. Drag or click the mouse to create the object.

3. Choose Chart Data New Series, double-click on the object, or press F2.

   The screen changes to Point mode.

4. Drag the mouse over the first data series you want to chart so that it is highlighted.



Series
● 1st ○ 5th
○ 2nd ○ 6th
○ 3rd ○ 7th
○ 4th ○ 8th

% Overlap: 0
% Width: 75
Angle: 0

☐ Horizontal
☐ Stacked
☐ New Cluster
☐ Clockwise

Figure 6-7 Changing the Chart Type

3. Choose the data series by selecting one of the numbered buttons.

4. Select one of the chart type icons.

5. If desired, select another data series and chart type icon.

6. Choose OK when you are finished.

Bar Charts

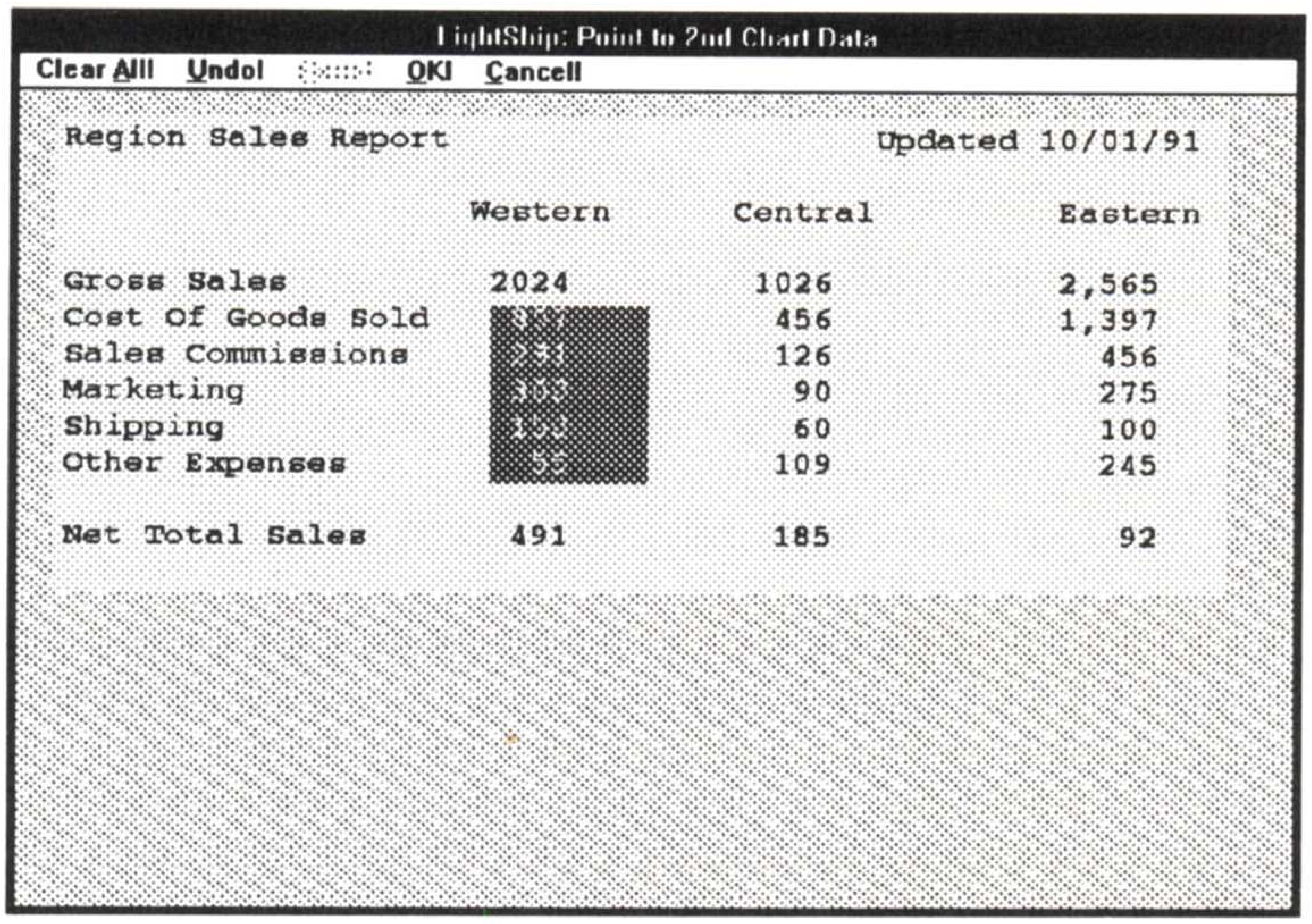
A bar chart draws bars between the crosses line and the data points. Bar charts are the default chart type, so you do not need to select the Bar button unless you are changing from another type of chart. If more than one data series is a bar type, the bars appear next to each other at each tickmark, rather than in front of each other. These bars are in the same cluster.

Adding a Data Series

To add another data series:

1. Choose Chart Data New Series, press F2, or double-click on the object.

   The screen changes to Point mode.


LightShip: Point to 2nd Chart Data
Clear All! Undo! OK! Cancel!

```
Region Sales Report                          Updated 10/01/91

                         Western       Central          Eastern

Gross Sales               2024          1026            2,565
Cost Of Goods Sold   [illegible]         456            1,397
Sales Commissions    [illegible]         126              456
Marketing                  303            90              275
Shipping                   103            60              100
Other Expenses              55           109              245

Net Total Sales            491           185               92
```

Figure 6-5 Selecting the Second Data Series

2. Select the next data series.
3. Choose OK! on the menu bar.

   The second data series is graphed on the same chart as the first data series.

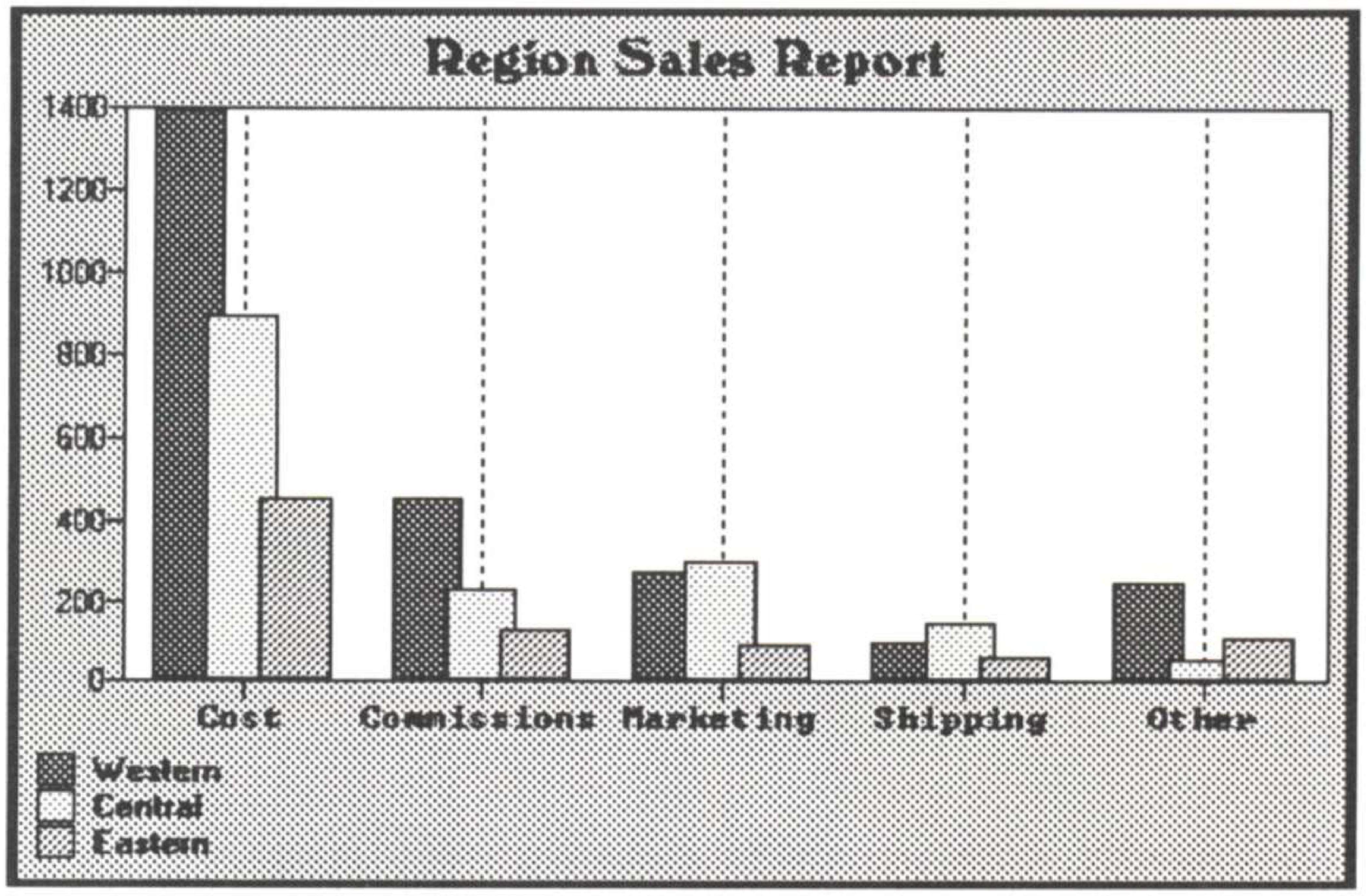


Figure 6-9 How % Overlap Affects Same-Clustered Bars

Creating New Clusters

When more than one data series is a bar type, the bars are in the same cluster by default. This means they are drawn next to each other at each data point. When you create a new cluster, the bars for that data series are drawn in front of the previous data series. The data in the front must be smaller than the data in the back or the data in back is hidden. You can ensure that all bars are visible by making each data series narrower than subsequent data series (see Figure 6-10).

- **To create a new cluster:**

Turn on the New Cluster button for a data series.

- **To delete a data series:**

  Choose Clear All! on the menu bar.

2. Choose OK! on the menu bar when you are finished.

Changing the Chart Type of a Data Series

Each data series you chart has a chart type, for example, bar, line, area, or pie. You use the Chart Type dialog box to change the chart type and the attributes associated with that type. You choose a data series by selecting the number of the series. For example, the 1st button selects the first data series you charted; the 2nd button selects the second data series you charted, and so on. The settings for that data series then display in the dialog box and you can change them. You can change as many data series as you want before choosing OK.

To read about each of the chart types in detail, see the following sections.

- **To change a chart type:**

1. Select the chart.
2. Choose Chart Type.

   A dialog box appears.

Line Charts

A line chart draws a line connecting the data points.

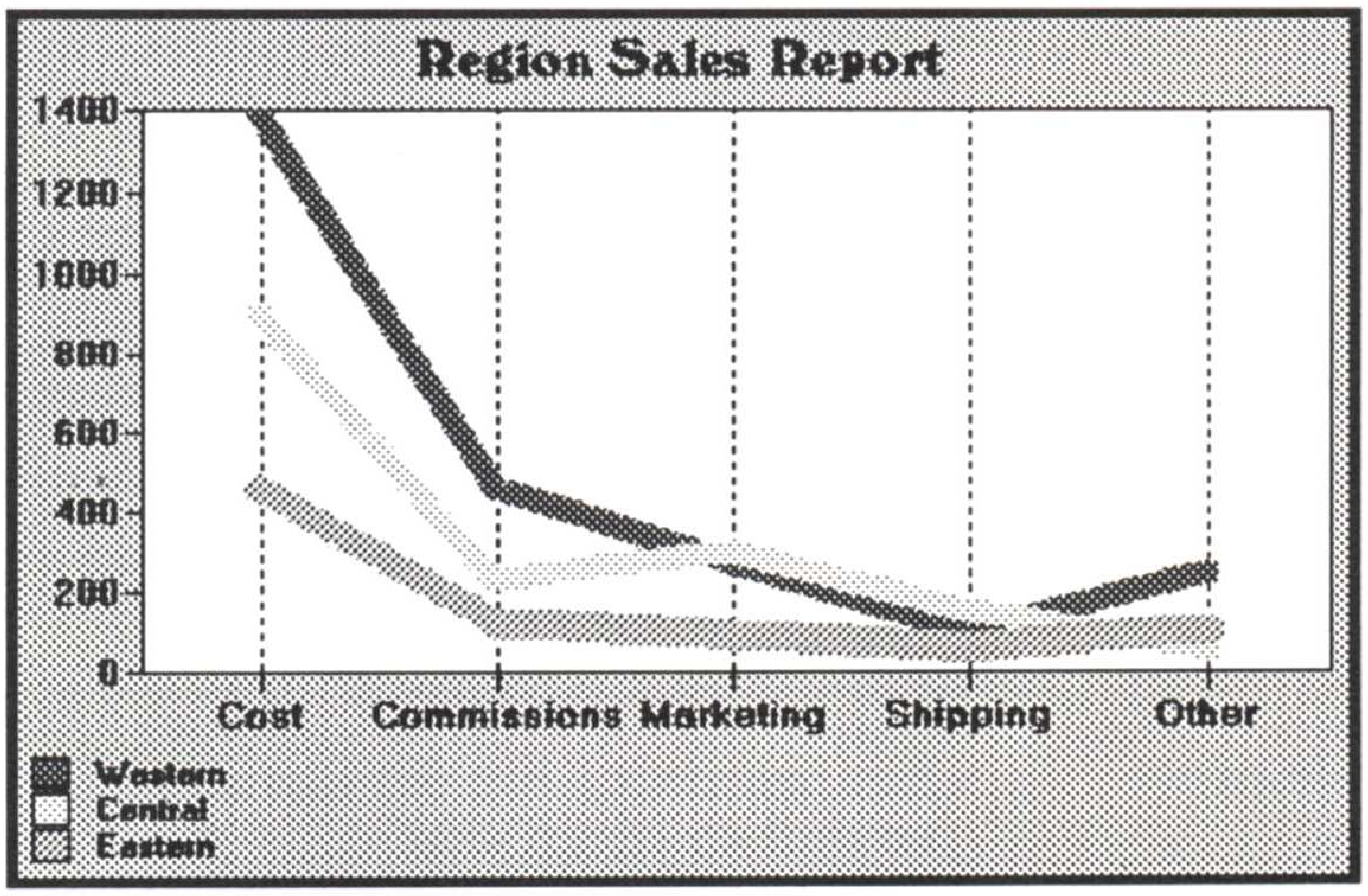


Figure 6-12 A Line Chart

Changing Flatness

- **To change the flatness of a line:**

  Type in a number from zero to 100 in the % Flat box.

In Figure 6-13, the chart on the left has a % Flat setting of zero and the chart on the right has a % Flat setting of 100.

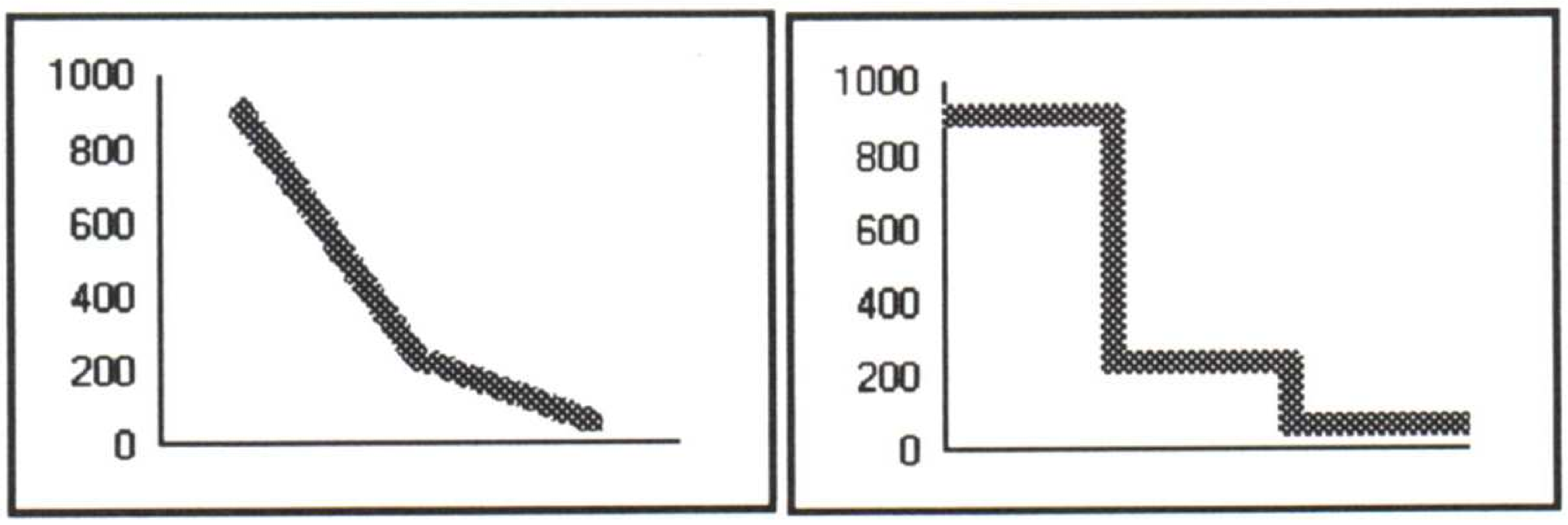


Figure 6-13 How % Flat Affects Line Charts

You can specify the width and overlap between bars, create new clusters so that the bars appear in front of each other, or stack them on top of each other to show totals.

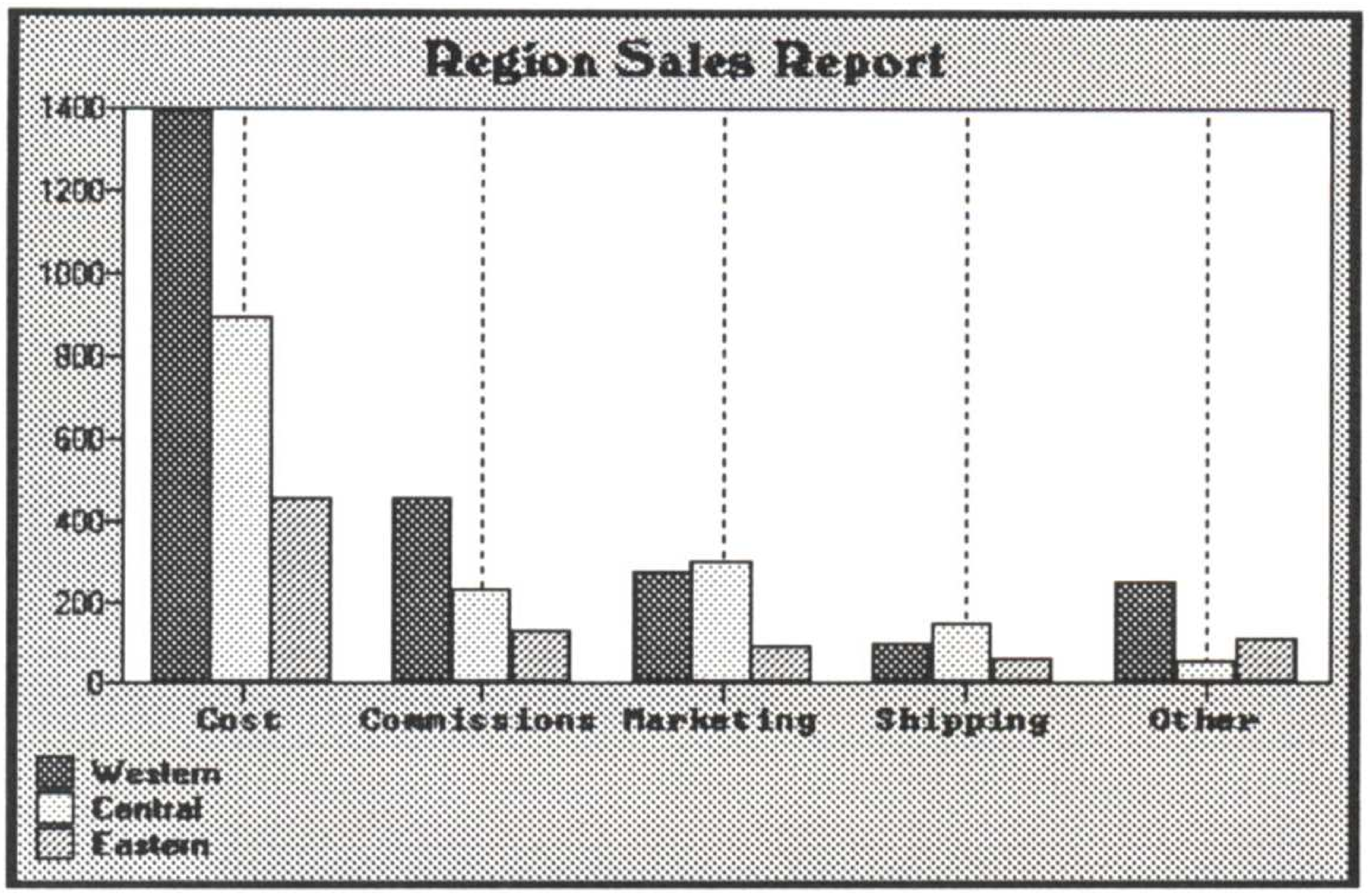


Figure 6-8 Same-Clustered Bars

Changing Width and Overlap

You can change the width and overlap of bars. When bars are in the same cluster, the width you specify for the first data series sets the width for all other data series that you display as bars. Only bars in the same cluster can overlap.

- **To change the width of bars:**

Type a number from one to 100 in the % Width box.

- **To specify the amount of overlap between bars:**

Type a number from zero to 100 in the % Overlap box.

This number represents the percentage that each subsequent data series in the same cluster will overlap. Figure 6-9 shows a bar chart with a % Overlap setting of 25.

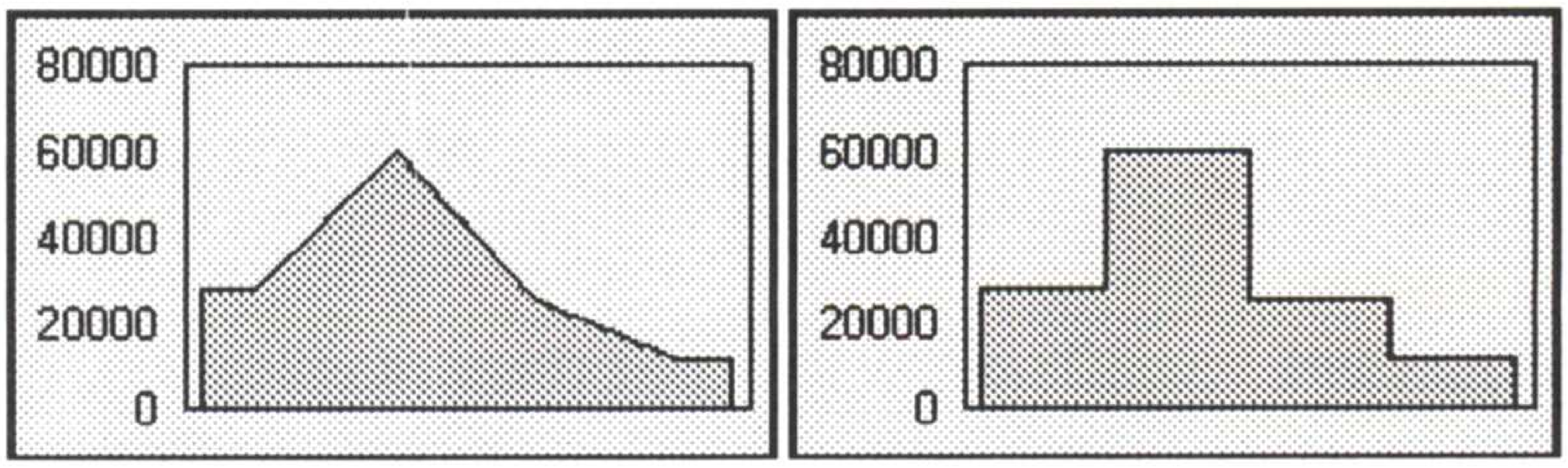


Figure 6-15 How % Flat Affects Area Charts

Changing Width

If you enter a width setting for an area chart, it affects the first and last data point. A wide width makes the first and last data point protrude as far as possible. A narrow width makes the first and last data points start and drop off at a sharp angle. In Figure 6-16, the chart on the left has a width of 100, while the chart on the right has a width of zero.

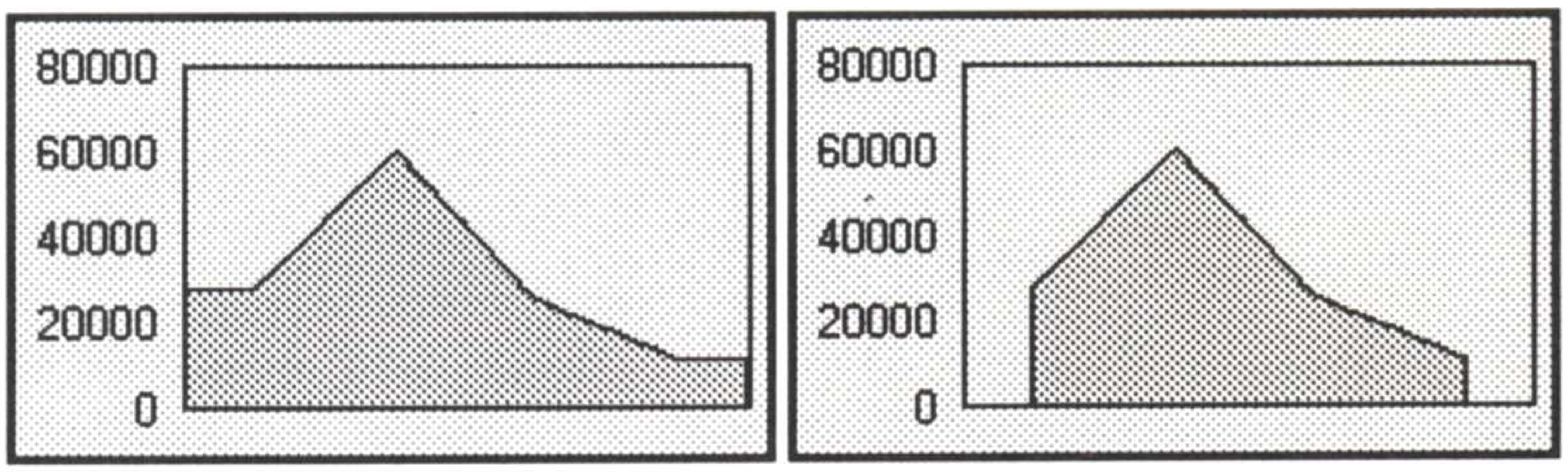


Figure 6-16 How % Width Affects Area Charts

- **To change the width of areas:**

Type a number from zero to 100 in the % Width text box.

Pie Charts

The data in a pie chart is represented as wedges within a circle. A LightShip pie chart displays data counterclockwise, with the first wedge starting at 3 o'clock. You can change the width of the circle, change the degree at which the first wedge begins, and change the direction in which the data displays.

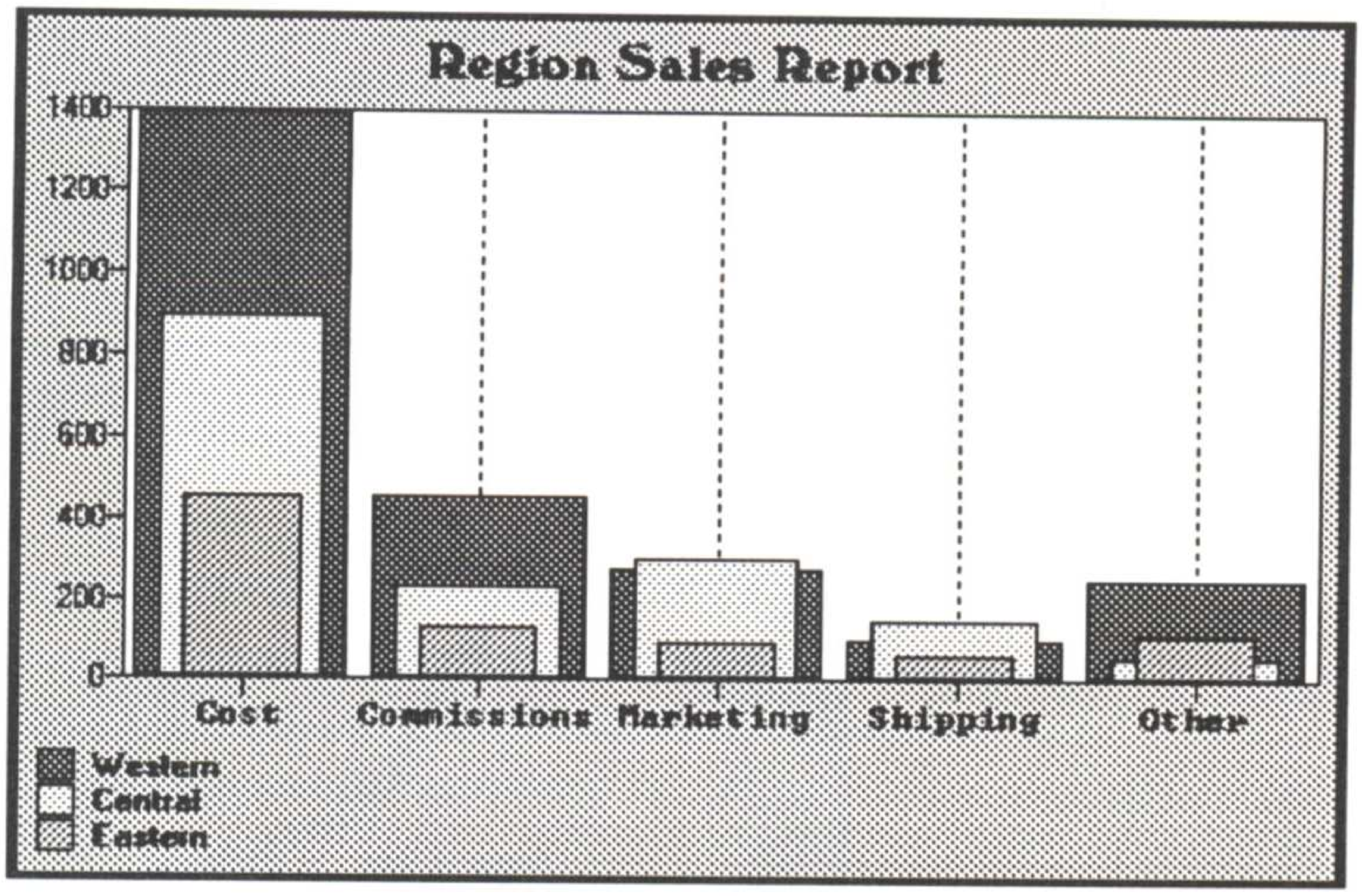


Figure 6-10 New-Clustered Bars With Different Widths

Stacking Bars

You can stack a bar chart, as shown in Figure 6-11. The second and third data series in this chart have Stacked and New Cluster on.

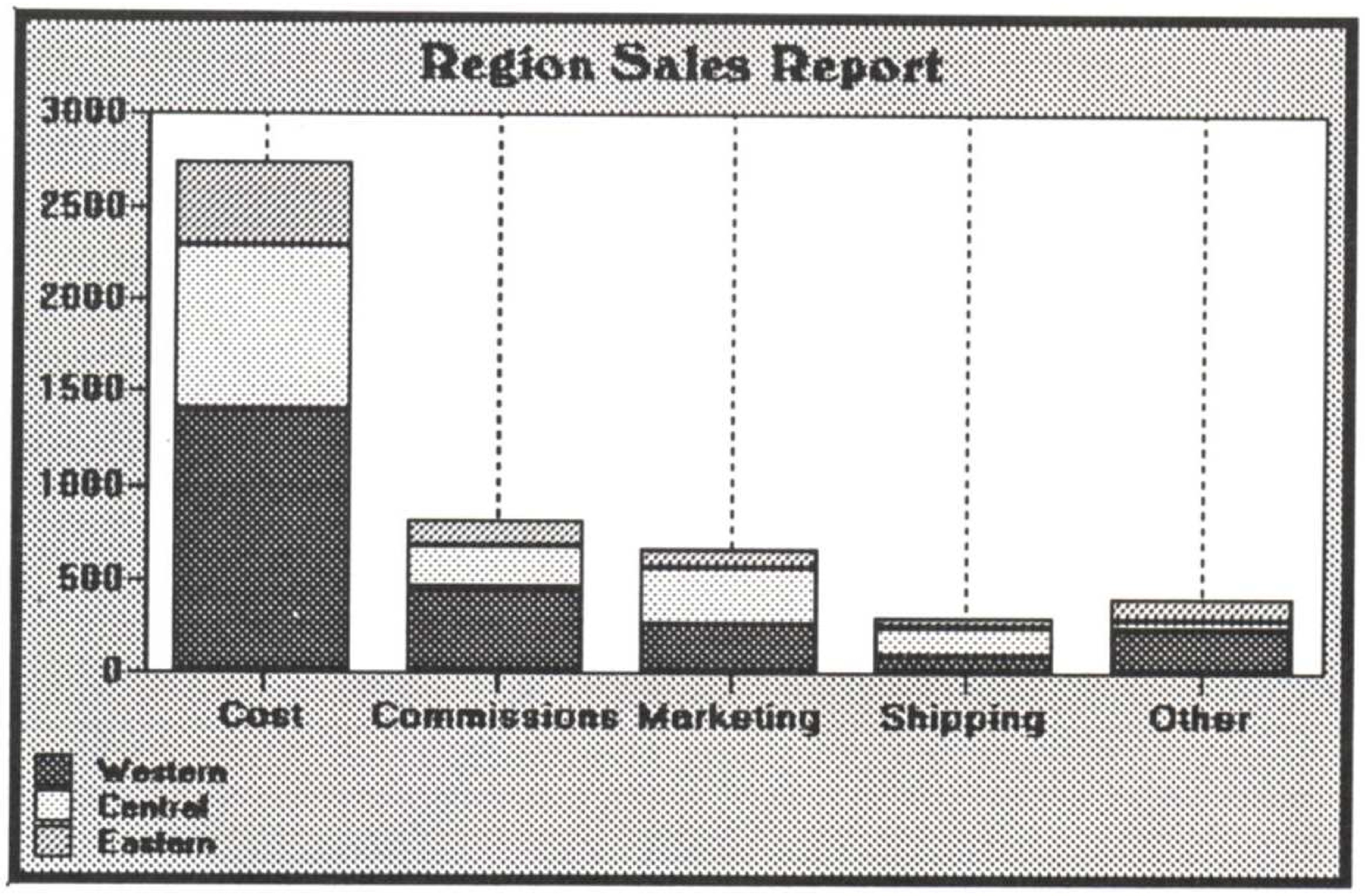


Figure 6-11 A Stacked Bar Chart

Changing Direction

- **To change the direction of data from counter-clockwise to clockwise:**

Turn on the Clockwise check box.

Coloring Pie Wedges

- **To color the wedges in a pie:**

1. Choose Chart Color.
2. Select a data series number.

   The first wedge of the pie is 1st Chart Data, the second wedge of the pie is 2nd Chart Data, and so on.
3. Select a color.
4. You can continue selecting data series numbers and colors until you are finished.
5. When you are finished, choose OK.

Horizontal Charts

Charts are vertical by default.

- **To make an area, bar, or line chart horizontal:**

1. Select the chart.
2. Turn on the Horizontal check box in the Chart Type dialog box.

Changing Width

- **To change the width of a line:**

  Type in a number from zero to 100 in the % Width box.

Stacking Lines

You can stack line charts, as shown in Figure 6-14.

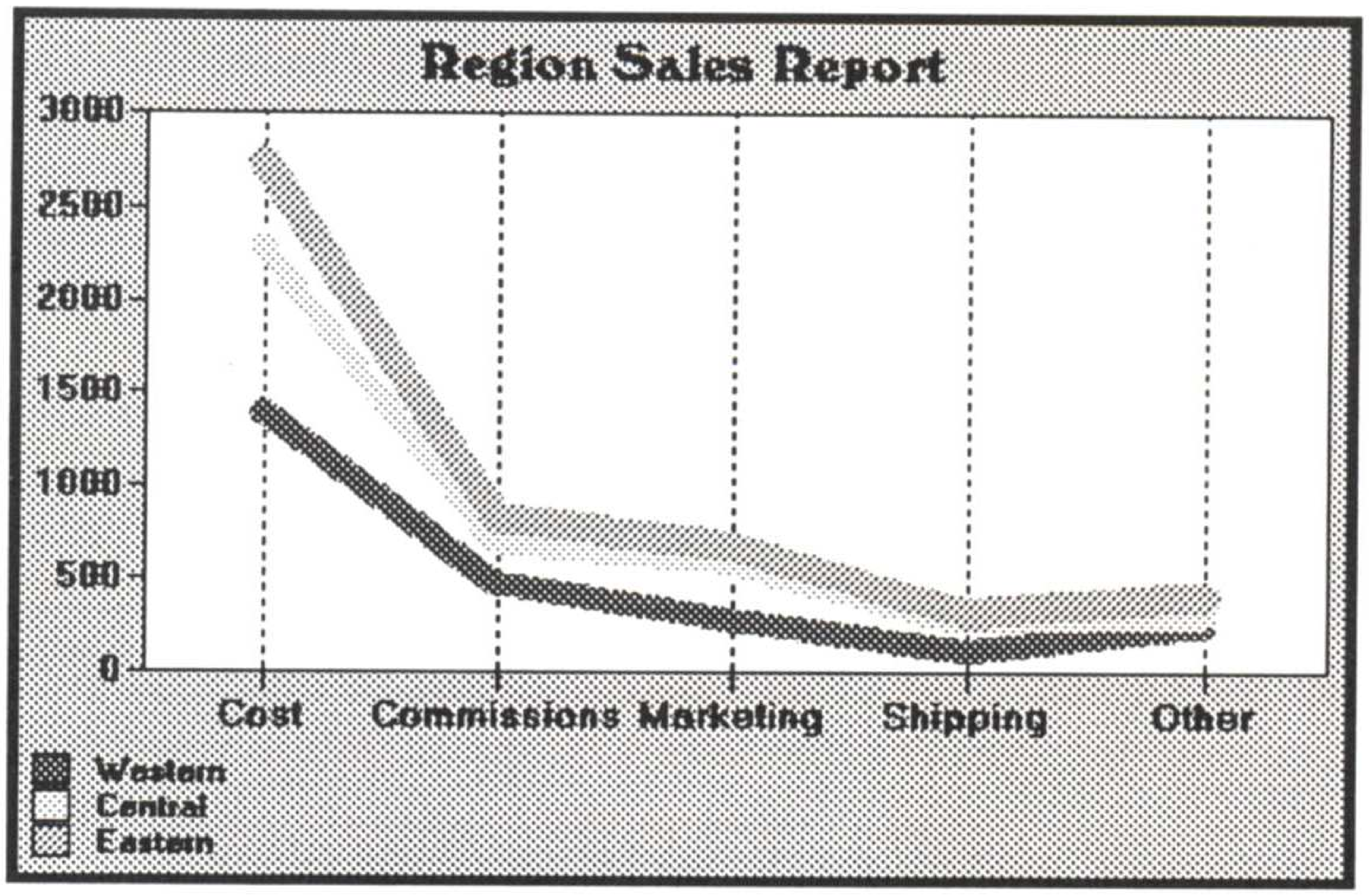


Figure 6-14 A Stacked Line Chart

Area Charts

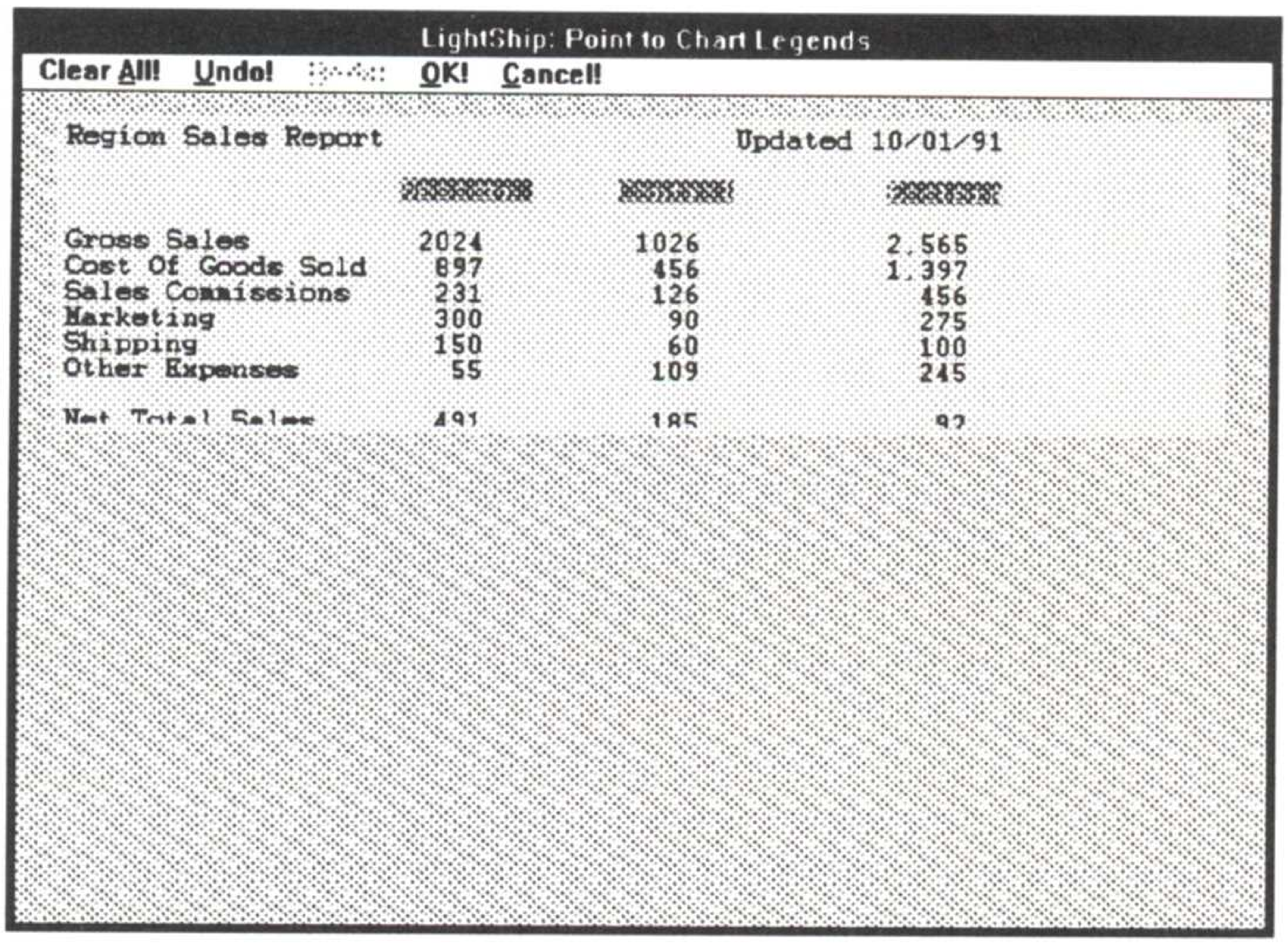
An area chart fills in the area between the crosses line and the data point. Area charts are best for charting the first data series in a chart or for charting a single data series.

Changing Flatness

- **To change the flatness of an area:**

  Type in a number from zero to 100 in the % Flat box.

Figure 6-15 shows a chart on the left with a % Flat setting of zero and a chart on the right with a % Flat setting of 100.

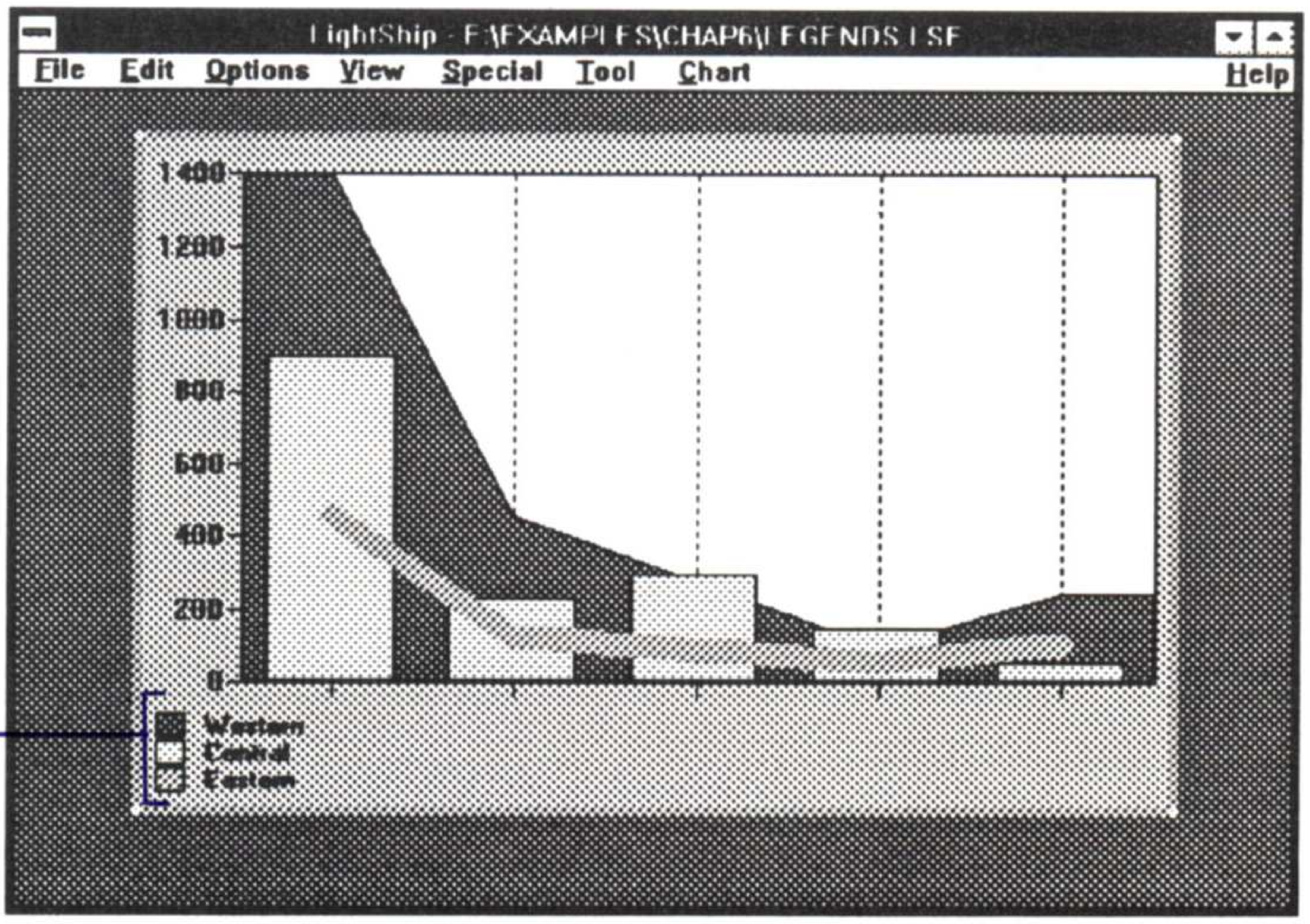

LightShip: Point to Chart Legends
Clear All! Undo! OK! Cancel!

```
Region Sales Report                       Updated 10/01/91

Gross Sales           2024        1026          2,565
Cost Of Goods Sold     897         456          1,397
Sales Commissions      231         126            456
Marketing              300          90            275
Shipping               150          60            100
Other Expenses          55         109            245

Net Total Sales        491         185             92
```

Figure 6-19 Selecting Legends

3. Select the legends in the order that you want them to appear.

4. Choose OK! on the menu bar.


LightShip - F:\EXAMPLES\CHAP6\LEGENDS.LSF
File Edit Options View Special Tool Chart Help
1400
1200
1000
800
600
400
200
0
Western
Central
Eastern

Legends

Figure 6-20 Displaying Legends

Pie charts only graph one data series at a time. If you select multiple data series and define them as pie charts, pie charts display on top of each other. The data series' are charted in order, so that the first pie will be furthest back, the second pie will be next, and so on. You can make them all visible by changing the width of the ones in front so that they are smaller.

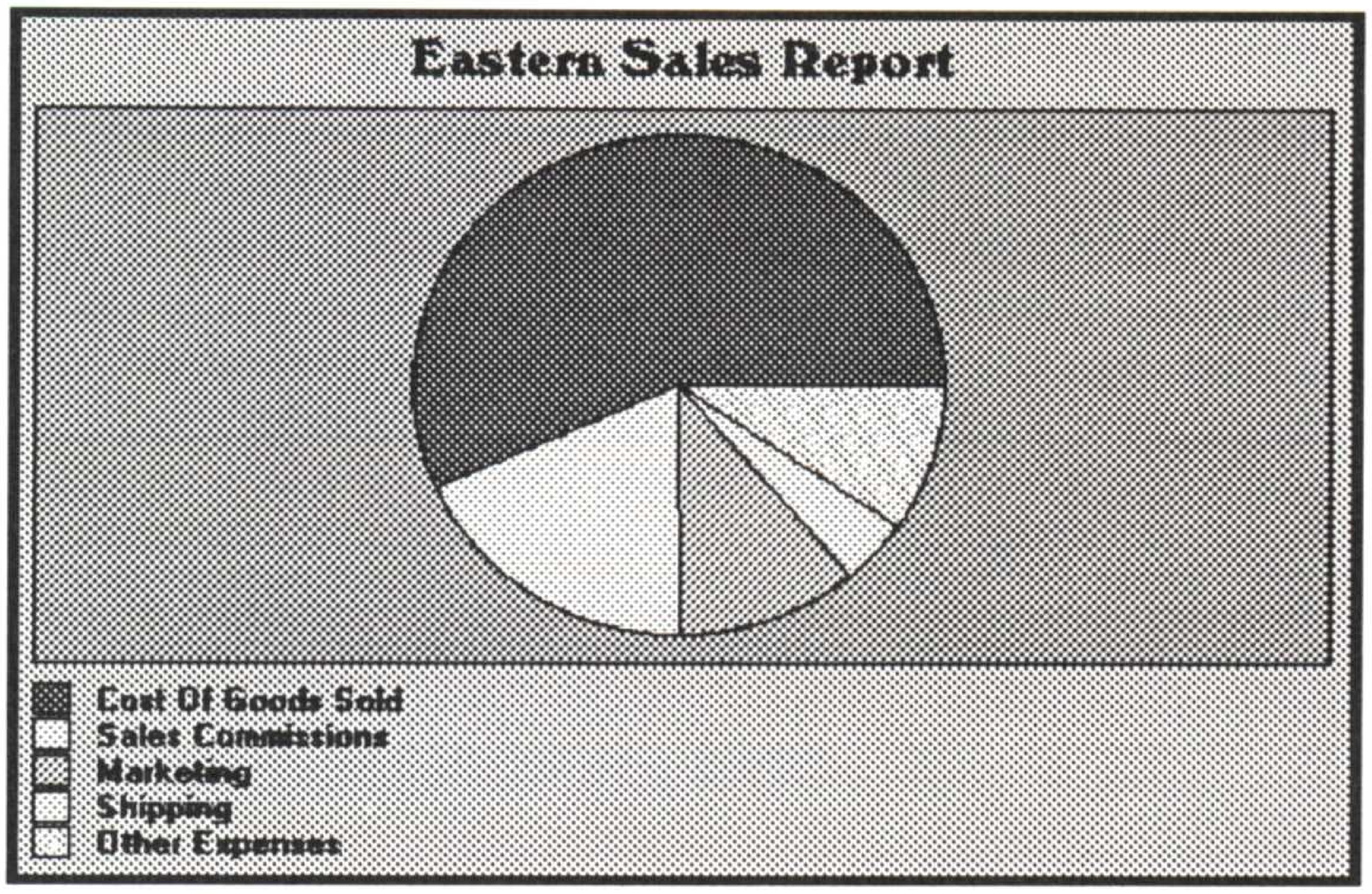


Figure 6-17 A Pie Chart

Changing Pie Width

- **To change the width of a pie chart:**

  Type a number from one to 100 in the % Width box.

- **To specify the degree at which the first wedge begins:**

  Type a number from zero to 359 in the Angle box.

  For example, to start charting at 12 o'clock, type 90.

Chapter 7

Creating Menu Objects

This chapter explains how to create menu-bar menus and special hidden menu objects used only for executing actions.

What is a Menu Object?

A menu object allows you to perform actions. Menu objects perform the same actions as hotspots; for example, they can execute commands, call functions, and set parameters.

Menu objects are not normally displayed on the screen. To see them at the Author level, turn on View Show Hidden Objects.

Types of Menu Objects

There are three types of menu objects:

Menu-Bar	Menu-bar menu objects display menus on the menu bar at the Browse and Capture levels. Actions are executed when you choose the menu item or the menu-bar name or when an *Execute Menu* action is performed by another menu object or hotspot.
Event-Driven	Event-driven menu objects are special objects provided by LightShip that do not appear on the menu bar. Actions are executed when a specific event occurs, such as a file opening or

	closing, or when an *Execute Menu* action is performed by another menu object or hotspot.
Execute	Execute menu objects are user-defined menu objects that do not display on the menu bar. The purpose of these objects is to remain hidden and execute actions when called by another hotspot or menu object's *Execute Menu* action.

The Menu Object Menu

When you create or select a menu object, the Menu object menu appears. This menu allows you to:

- Assign a name and item.
- Define actions.
- Assign parameter values and pass parameters to other files.

Creating Menu Objects

To create any type of menu object, you define:

1. A menu-bar name

2. (Optional) A menu-item name

3. (Optional) The actions associated with the menu name or item. For example, actions allow you to:

    - Execute Windows, DOS, DDE and LightShip commands.
    - Perform mathematical operations and functions.
    - Perform branching logic.
    - Manipulate strings.

    For more information on how to define actions and the order in which they are executed, see *Chapter 9: Defining*

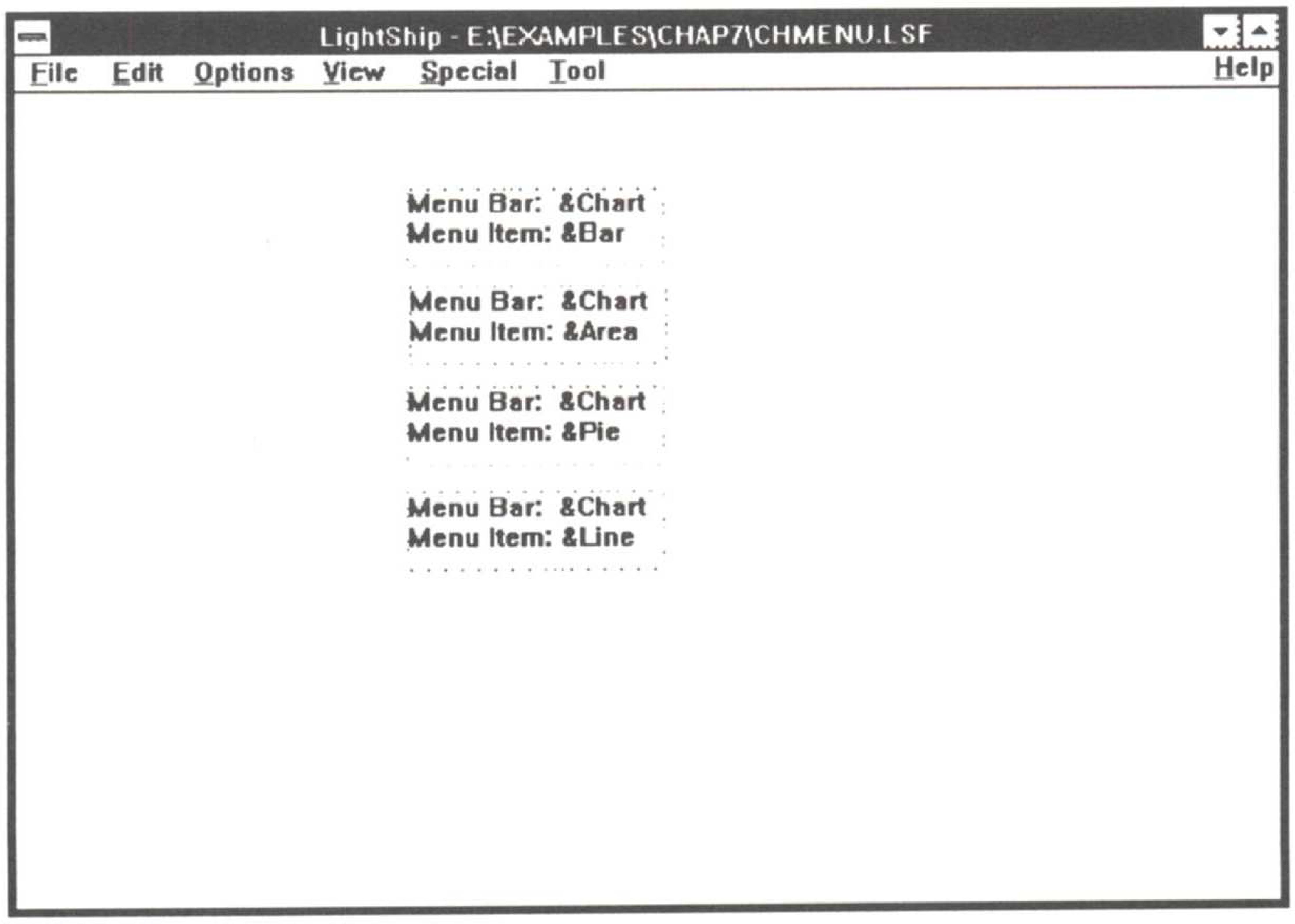
Actions. For information about a specific action, see the *LightShip Reference Guide*.

4. (Optional) Parameters. You can assign values to parameters and pass them to other screens when menu object actions are executed. For more information about how to define parameters, see *Chapter 10: Using Variables and Parameters*.

Creating Menu-Bar Menu Objects

Menu-bar menu objects display on the menu bar at the Browse and Capture levels. Actions are executed when you choose the menu item or the menu-bar name or when the menu object is called by a *Execute Menu action* performed by another menu object or hotspot.

Figure 7-1 shows the menu objects that make an example Chart menu. You create a new menu object for each menu item. Each item on a menu has the same menu-bar name.



Menu Bar: &Chart
Menu Item: &Bar

Menu Bar: &Chart
Menu Item: &Area

Menu Bar: &Chart
Menu Item: &Pie

Menu Bar: &Chart
Menu Item: &Line

Figure 7-1 Menu Objects

Menu Display

At the Browse level, the Chart menu appears as shown in Figure 7-2. The LightShip Browse menus (File, Edit, and Special) appear to the left of any menu-bar menus, unless you turn on Options Hide Menu Bar.

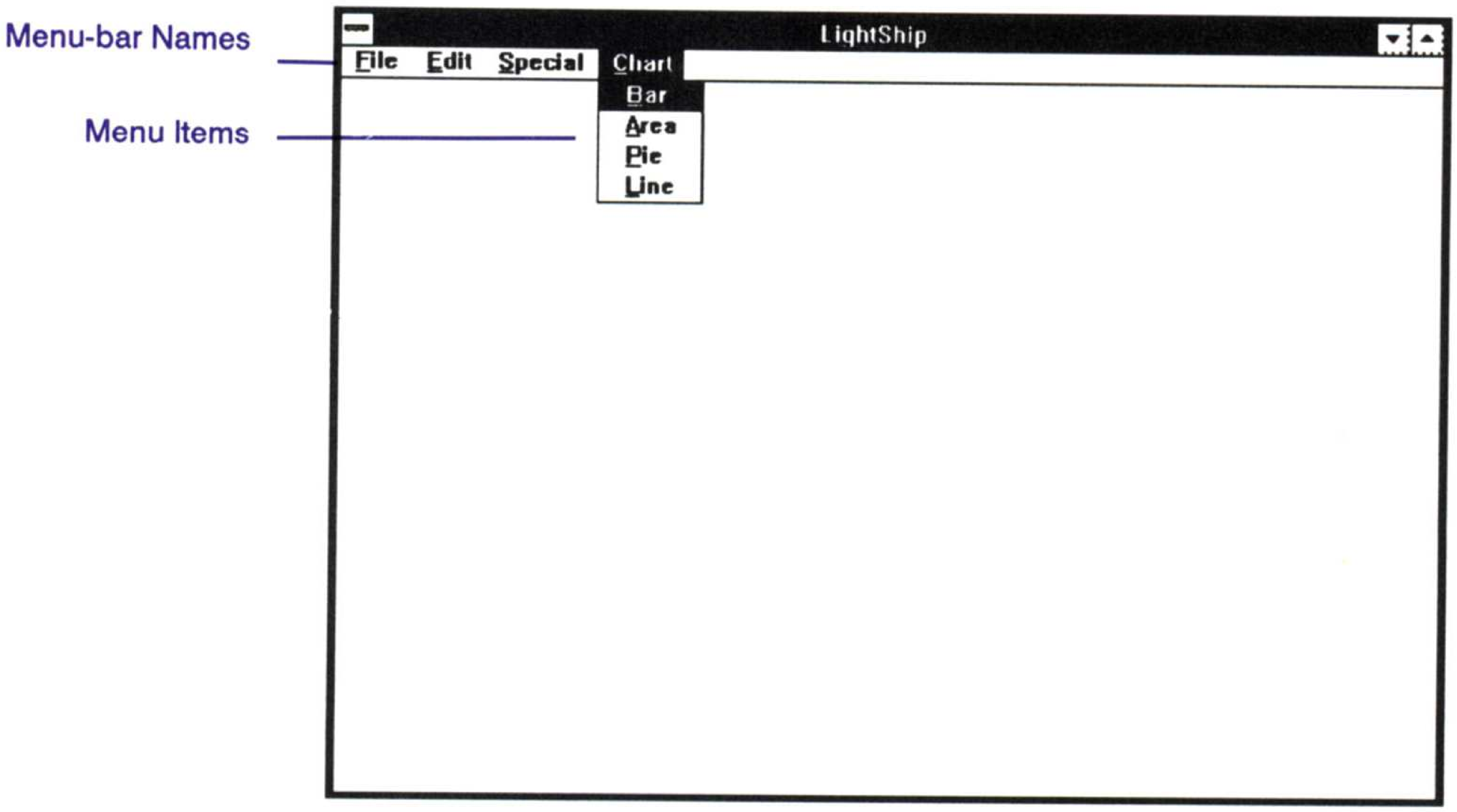


Figure 7-2 A Menu at the Browse Level

Menu-Bar Names

Any letter of a menu-bar name preceded by an ampersand (&) can be used as a shortcut key; the letter appears underlined on the menu-bar name. For example, if you type &Chart, the menu-bar name will read Chart. You can press ALT and the underlined character to display the menu.

You can have just a menu-bar name with no item, and still have actions and parameters associated with it. The usual convention is to follow a menu-bar name with no items attached to it with an exclamation point (!). For example, a Return! menu is a standard way of returning to a higher-level screen.

Menu-Item Names

A menu item is optional. If a menu item leads to a screen that prompts for more information before an action is executed, it is conventional to follow it with ellipses (...).

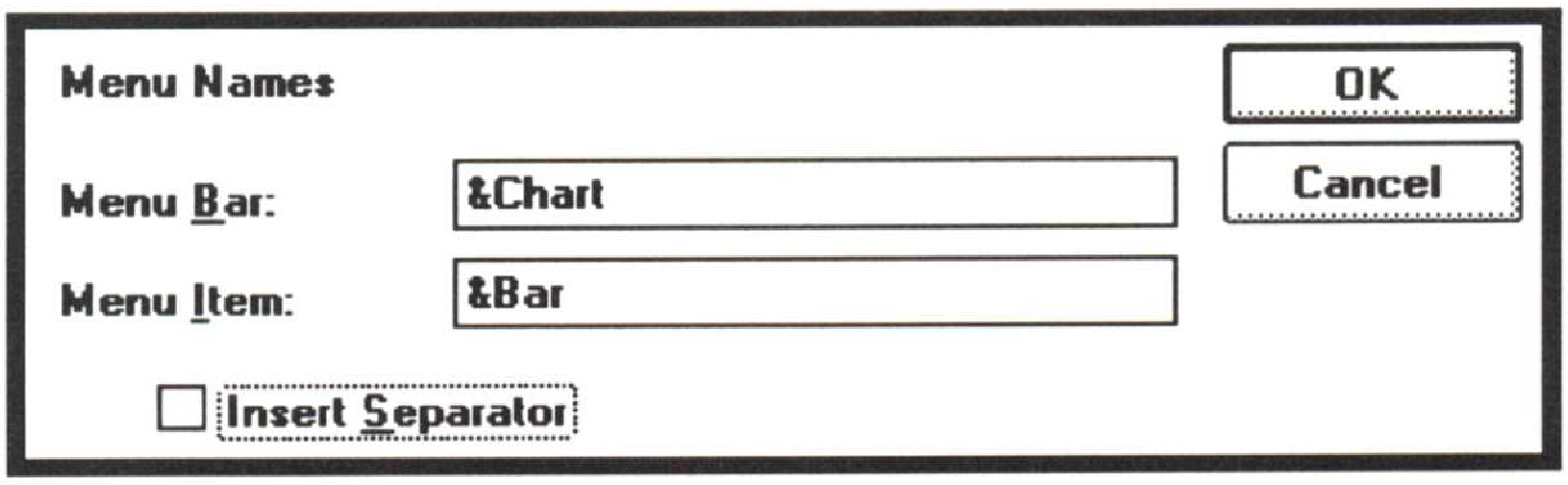
For menu-item names, any letter that you precede with an ampersand (&) can be used as a shortcut key; the letter appears underlined on the menu-item name. For example, if you type &Bar, the menu item will read Bar. You can press the underlined character to carry out the action(s) when the menu is displayed.

Creating a Menu-Bar Menu Object

■ **To create a menu-bar menu object:**

1. (Optional) Choose View Show Hidden Objects.
2. Choose Tool Menu.
3. Drag or click the mouse to create the menu object.
4. Choose Menu Names, press F2, or double-click on the object.

   A dialog box appears.



Menu Bar: &Chart

Menu Item: &Bar

☐ Insert Separator

Figure 7-3 Creating a Menu

5. Type a menu-bar name in the Menu Bar text box.
6. (Optional) Type the menu item in the text box labelled Menu Item.

Inserting a Separator

- **To draw a line before a menu item:**

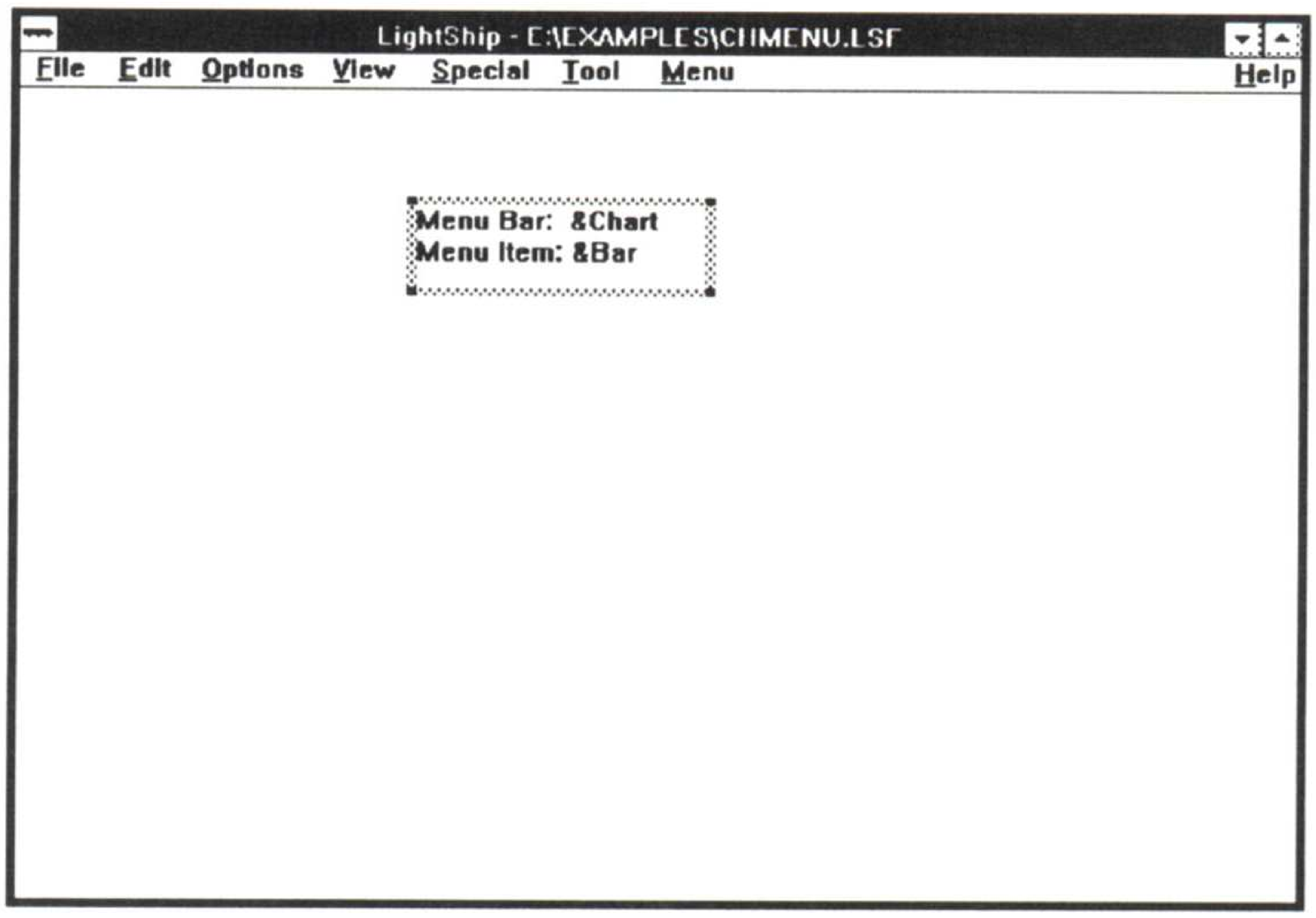
  Select Insert Separator.

  For example, on the LightShip File menu, Save As... and Print are separated by a line.

7. Choose OK.

   Figure 7-4 shows how a menu object looks on the screen. You might want to resize the object around the text.

☞ To create another item on the same menu, select the menu, press INS to make a copy, and then double-click on the copy to change the item name.



Menu Bar: &Chart
Menu Item: &Bar

Figure 7-4 A Menu Object

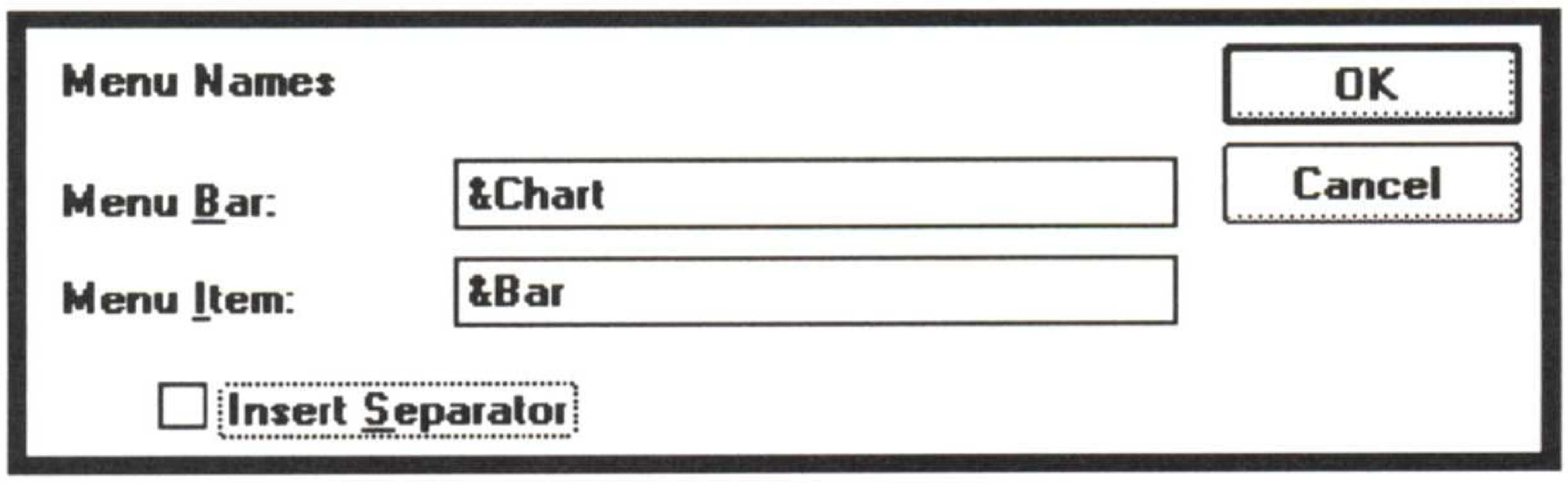
8. (Optional) Choose Menu Actions to define the actions.

9. (Optional) Choose Menu Parameters to define parameters.

An Example of Creating a Menu-Bar Menu

This section steps through part of the creation of a menu called Chart with menu items on it called Bar, Area, Line, and Pie. When you choose an item from the menu, it changes the chart type of a chart displayed on the screen.

1. Choose Tool Menu to create a menu object called &Chart with an item called &Bar.



Menu Names

Menu Bar: &Chart

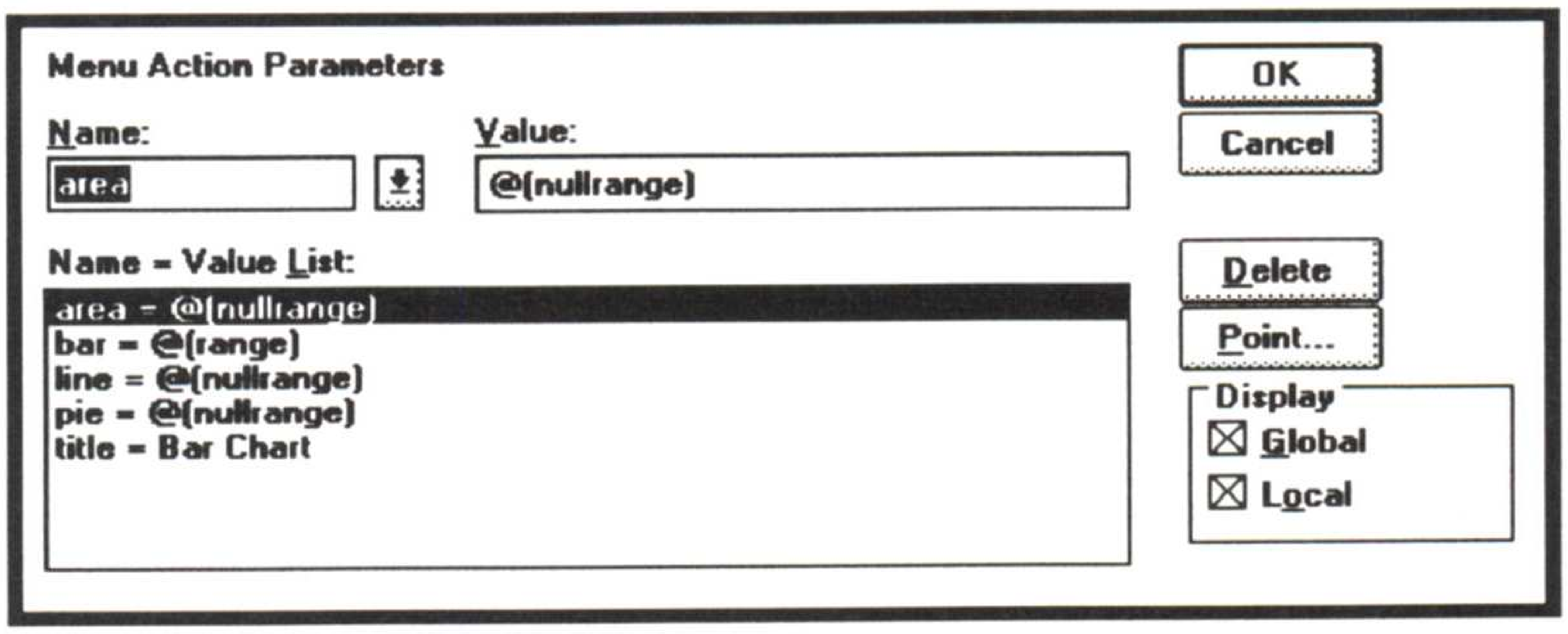
Menu Item: &Bar

☐ Insert Separator

Figure 7-5 Creating a Menu Object

2. Make three copies of the menu object and change the items to &Area, &Pie, and &Line.

3. For each menu object, choose Menu Parameters and define the parameters. Figure 7-6 shows the parameters defined for &Bar.



Menu Action Parameters

Name: area

Value: @(nullrange)

Name = Value List:

area = @(nullrange)
bar = @(range)
line = @(nullrange)
pie = @(nullrange)
title = Bar Chart

Display

☒ Global

☒ Local

Figure 7-6 Defining Menu Parameters

Ordering Menu-Bar Menus and Menu Items

The front-to-back order of menu-bar menu objects specifies the order that menu names appear on the menu bar and the order that menu items appear on the menu.

Menu-bar names appear on the menu bar and menu items appear on the menu in the order in which you create them, unless you turn on Special Create in Back. That is, they display from back to front and the menu object furthest back is the first to appear. Use the Special Send and Bring commands to change the order in which they appear by changing their positions relative to the other menu objects.

☞ **Important**

The order of menu objects may also affect the order in which actions are executed. For more information, see *Chapter 9: Defining Actions*.

Displaying Menu-Bar Menus

Displaying Menus on the Menu Bar

Menu-bar menus do not appear on the menu bar at the Author level.

- **To see a menu after you have created it:**

  Choose Special Author or press F4.

- **To return to the Author level:**

  Choose Special Author or press F4.

Hiding the LightShip Browse Menus or the Menu Bar

User-defined menus appear on the menu bar to the right of the LightShip Browse level menus (File, Edit, and Special) at the Browse level by default. If you have user-defined menus, you can hide the LightShip Browse menus by choosing Options Hide Menu Bar. If you have no user-defined menus, and you turn on Options Hide Menu Bar, the menu bar is not displayed.

■ **To hide the LightShip Browse menus or the menu bar:**

At the Author level, choose Options Hide Menu Bar.

Creating Execute Menu Objects

Execute menu objects are user-defined menu objects that do not display on the menu bar. Their purpose is to remain hidden and execute actions when called by another hotspot or menu object's *Execute Menu* action.

Execute menu objects are identified by two ampersands preceding their menu-bar names. They do not require an item name, but you can type a comment in the Menu Item text box, if desired.

Creating an Execute Menu Object

■ **To create an execute menu object:**

1. (Optional) Turn on View Show Hidden Objects.
2. Choose Tool Menu.
3. Drag or click the mouse to create the menu object.
4. Choose Menu Names, press F2, or double-click on the object.

   The Menu Names dialog box appears.
5. Type a menu-bar name that begins with two ampersands (&&).
6. (Optional) Type a comment in the text box labelled Menu Item.

7. (Optional) Choose Menu Actions to define one or more actions.
8. (Optional) Choose Menu Parameters to define one or more parameters.

Executing an Execute Menu

The only way to call an execute menu is with the *Execute Menu* action. For more information, see "Executing a Menu" in *Chapter 9: Defining Actions* or see the *Execute Menu* action in the *LightShip Reference Guide*.

Creating Event-Driven Menu Objects

LightShip provides four special event-driven menu objects. These menu objects are used solely for performing actions; they do not appear on the menu bar as menus. Their actions are executed when a specific event occurs or when they are called by a *Execute Menu* action performed by another menu object or hotspot. They execute actions at all levels.

The menu object name is preceded by two ampersands and it reflects the event that triggers the action. They do not require an item name, but you can type a comment in the Menu Item text box, if desired.

The menu objects and the events that trigger their actions are shown in Table 7-1.

Table 7-1 Event-Driven Menu Objects

Menu-Bar Name	Event
&&Open	A screen opening
&&Close	A screen closing
&&Recalc	A screen opening. Updating parameters. Issuing a request for external data. Issuing a Calculate Now command.
&&Error	A LightShip system error

Creating an Event-Driven Menu Object

■ **To create an event-driven menu object:**

1. (Optional) Turn on View Show Hidden Objects.
2. Choose Tool Menu.
3. Drag or click the mouse to create the menu object.
4. Choose Menu Names, press F2, or double-click on the object.

   The Menu Names dialog box appears.
5. Type a menu-bar name in the Menu Bar text box that begins with two ampersands, for example, &&Open.
6. (Optional) Type a comment in the text box labelled Menu Item.
7. (Optional) Choose Menu Actions to define one or more actions.
8. (Optional) Choose Menu Parameters to define one or more parameters.

&&Open

Use &&Open to perform actions when a screen opens, such as initializing variables or starting another application.

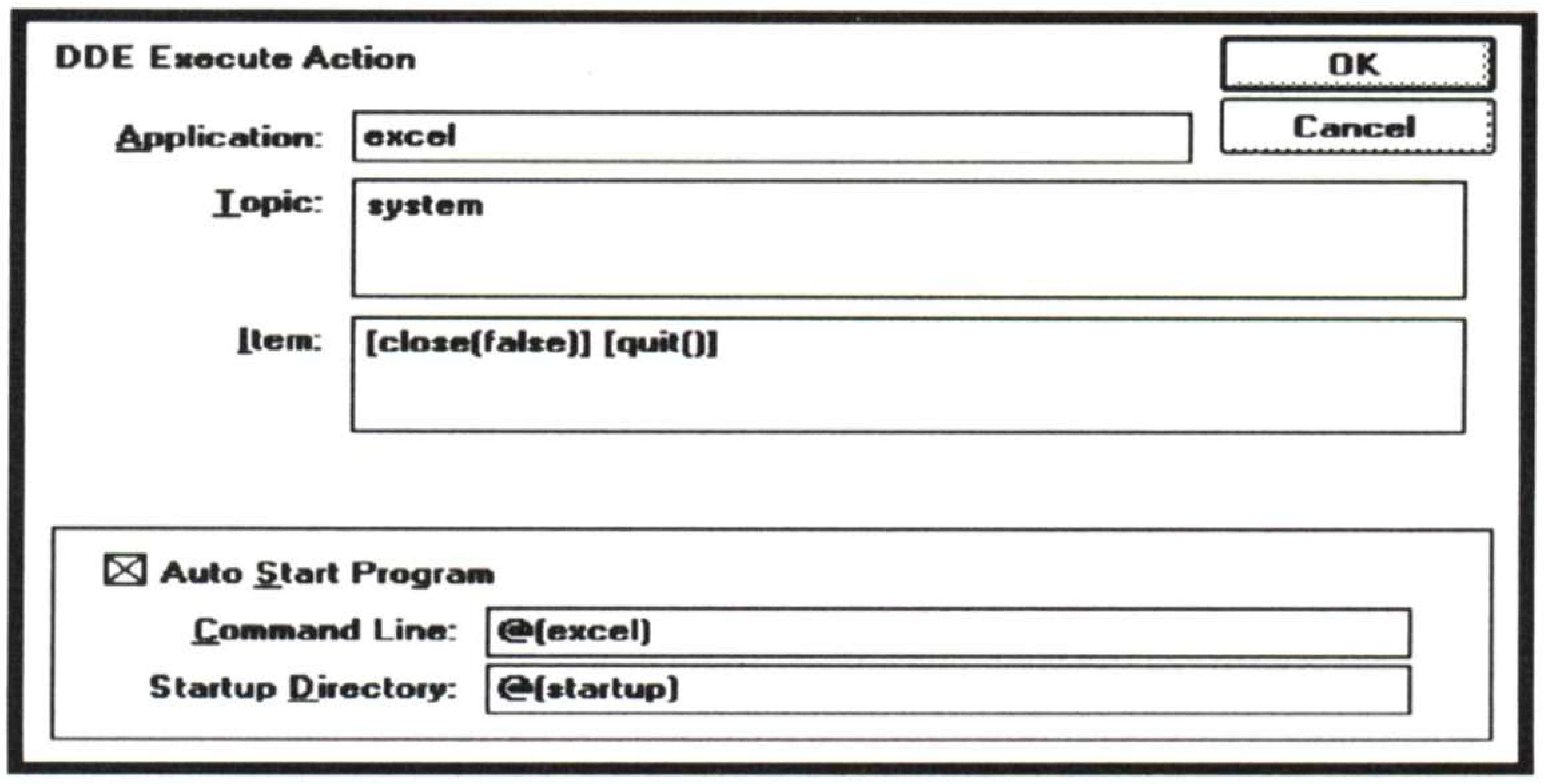
An &&Open object's actions are executed before all other actions, but it is still affected by the order of objects on the screen. For example, if you define a parameter with &&Open using the Point option, you must make sure that the document loads its data before the parameter value is assigned. Otherwise, the parameter is assigned a null value because it points to a value that has not been displayed yet. You can avoid this by making sure the document object is in front of the &&Open object. If it's appropriate, you might want to select the menu object and choose Special Send to Back to ensure that the document object is loaded before the &&Open object executes.

☞ **Important**

If an &&Open object performs an *Execute Menu* action, the menu being executed must be in front of the &&Open object.

&&Close

Use &&Close to perform actions when a screen closes, such as closing applications and deleting global variables. Figure 7-7 shows a *DDE Execute* action associated with an &&Close menu object. This action closes Excel when the screen closes.



Application: excel

Topic: system

Item: [close(false)] [quit()]

☒ Auto Start Program

Command Line: @(excel)

Startup Directory: @(startup)

Figure 7-7 Performing a DDE Execute Action When a Screen Closes

&&Recalc

Use &&Recalc to execute actions whenever a screen opens, a Calculate Now is issued, parameters are updated, or when requests for external data are executed. One way to use &&Recalc is to assign parameter values or perform calculations by pointing to text in a document object on the screen.

Note that it is especially important to pay attention to the order in which actions are performed when you are assigning parameter values by pointing with &&Recalc. For example, suppose you have a document object that displays actual and budget figures and you use a &&Recalc object to point to the figures and subtract them to produce variance figures. The variance figures are displayed in a user-entry document. In this case, the document object that the &&Recalc object is pointing to must be in front of the &&Recalc object so that the data is loaded before the &&Recalc object points to it. The &&Recalc object, which performs the calculation and produces the result variable, must be in front of the user-entry document that displays the result variable.

&&Error

Use &&Error to execute actions when any LightShip system error occurs. For example, if you attempt to open a file that LightShip cannot find for some reason, you can use this to return to a higher level screen.

Displaying Menu Objects on the Screen

Menu objects do not display at the Author level when they are not selected.

■ **To display menu objects:**

Choose View Show Hidden Objects.

The menu object appears with its name and item.

Or

Choose View Outline All Objects.

All the objects on the screen are outlined with a dotted line.

Changing a Menu Name or Item

■ **To change a menu name or item:**

1. Select the menu object.
2. Choose Menu Names, press F2, or double-click on the object.

   The Menu Names dialog box appears.
3. Type a new menu name in the Menu Bar text box or click on the insertion point to edit the existing menu name in the Menu Bar text box.
4. Type an item name or click on the insertion point to edit the existing item name in the Menu Item text box.
5. Choose OK.

* * *

Chapter 8

Creating Hotspots

Hotspots are a key element of any LightShip application. This chapter describes how to create and use hotspots.

What is a Hotspot?

A hotspot is an area of the screen that performs action(s) when you click on it. Hotspots can perform the same actions as menu objects; for example, they can execute commands, call functions, and set parameters.

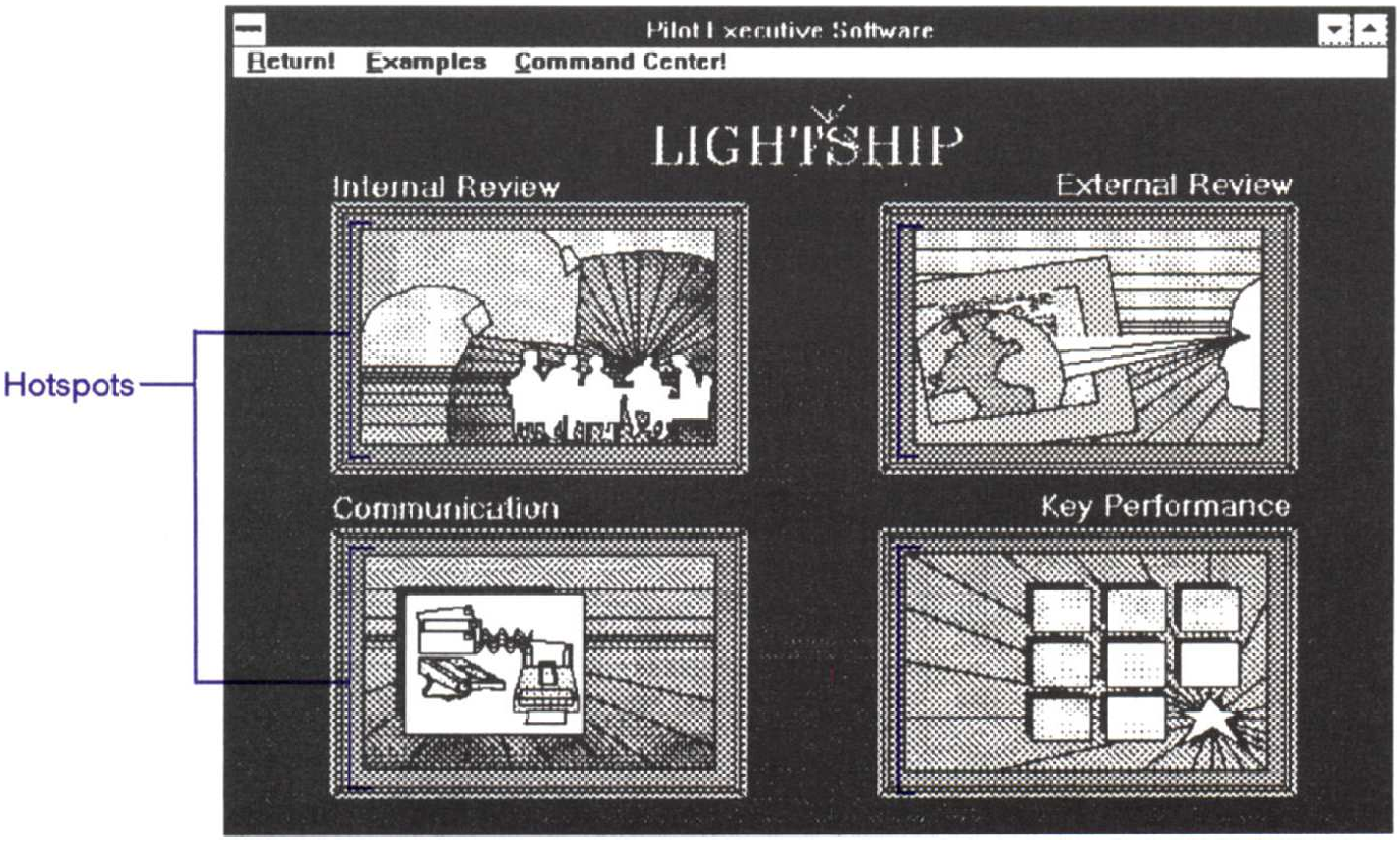


Figure 8-1 Hotspots

At the Browse level, you can tell when you are pointing to a hotspot because the cursor changes to a hand. For information on how to change the cursor to another symbol, see "Changing the Cursor."

Highlight and Button Style Hotspots

Hotspots are not displayed by default so that you can place them on other objects. Figure 8-1 shows a screen with a non-displayed hotspot placed over each image object. Another use of a non-displayed hotspot is to place it over a document object where you can use functions to return the value, row, or column that you click on.

You can control highlighting and create hotspots that look like command buttons, check boxes, or option buttons. For more information, see "Creating Hotspot Buttons."

The Hotspot Menu

When you create or select a hotspot, the Hotspot menu appears on the menu bar. Use this menu to:

- Define actions.
- Assign parameter values and pass parameters to other files.
- Specify a hotspot cursor file.
- Specify whether or not text is required to make the hotspot active.
- Specify how the hotspot displays, for example, the style and highlighting.

Creating a Hotspot

A hotspot can be small, for example, a single cell or button, or it can be large enough to cover multiple rows and columns in a document object. For more information about placing a hotspot over a document object, see "Placing a Hotspot in Front of a Document Object."

Creating a Hotspot

■ **To create a hotspot:**

1. (Optional) Choose View Outline Hotspots.

   Hotspots are not displayed unless you specify otherwise by turning on Hotspot Button Style.

2. Choose Tool Hotspot.

3. Place the mouse on the upper-left corner of the area that you want to define as a hotspot and drag the mouse down and to the right.

4. (Optional) Use Hotspot Actions to define the actions that the hotspot will execute. For example, actions allow you to:

   - Execute Windows, DOS, DDE and LightShip commands.
   - Perform mathematical operations and functions.
   - Perform branching logic.
   - Manipulate strings.

   For more information on defining actions, see *Chapter 9: Defining Actions*. For information about a specific action, see Chapter 10 of the *LightShip Reference Guide*.

5. (Optional) Use Hotspot Parameters to define parameters. You can assign values to parameters and pass them to other screens when hotspot action(s) are performed. For more information about defining parameters, see *Chapter 10: Using Variables and Parameters*.

6. (Optional) Use Hotspot Text Required to make the hotspot conditional on some specified text. For more information, see the section "Making a Hotspot Conditional on Text."

7. (Optional) Use Hotspot Highlight to determine the on/off style of the hotspot and whether it highlights. For more information, see "Creating Hotspot Buttons."
8. (Optional) Use Hotspot Button Style to represent a hotspot as a button. For more information, see "Creating Hotspot Buttons."

Creating Hotspot Buttons

There are two types of hotspots, non-displayed hotspots that highlight and button-style hotspots that look like Windows-style buttons. Hotspots are not displayed by default. If you want to draw your own button or place a hotspot over a number, text, or image, use a non-displayed hotspot. A button-style hotspot can look like a push button, a check box, or an option button.

Creating Button-Style Hotspots

Creating Push Buttons

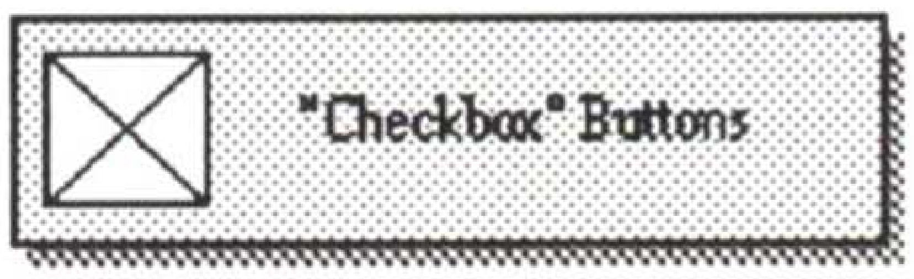
Push buttons are like Windows-style command buttons. Push buttons can execute any number of times while a screen is open. You cannot turn on Hotspot Highlight Oneshot for push buttons.

■ **To create a push button:**

1. Select the hotspot.
2. Choose Hotspot Button Style.
3. Choose Hotspot Highlight Off.

Creating Check Boxes

You can create a hotspot that looks like a check box and turns either on or off when you click on it.

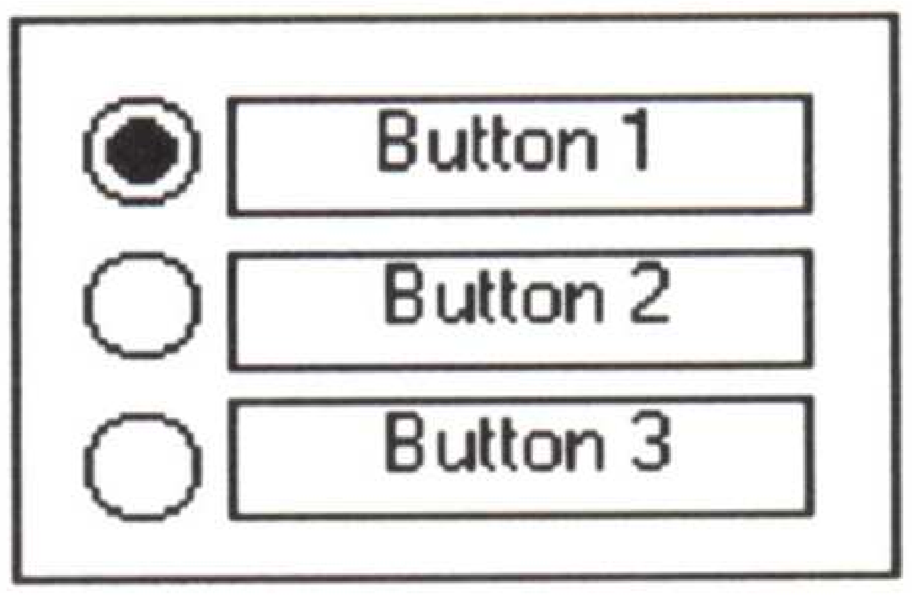


■ **To create a check box:**

1. Select the hotspot.
2. Choose Hotspot Button Style.
3. Choose Hotspot Highlight Toggle.

Creating Option Buttons

Option buttons (sometimes called radio buttons) are groups of round buttons, of which only one can be on at a time. When one button in the group turns on, the one that was on turns off. You are allowed up to three groups.



■ **To create a group of option buttons:**

1. Select a hotspot.
2. Choose Hotspot Button Style.
3. Choose one of the Hotspot Highlight Group options.
4. Choose the same group item for each hotspot in the group.

Creating Highlight Hotspots

When you create non-displayed hotspots, you can control their on/off style and their highlighting. If a non-displayed hotspot with highlighting enabled has an object behind it, the object's colors invert when you click on the hotspot.

Creating Oneshot Hotspots

You can click on oneshot hotspots only once each time the screen is opened. When you click on it, the hotspot is highlighted as shown on the right of Figure 8-2. It stays highlighted until you close the screen or go to another screen.

- **To create a non-displayed hotspot that can only be executed once:**

1. Select the hotspot.
2. Choose Hotspot Highlight Oneshot.

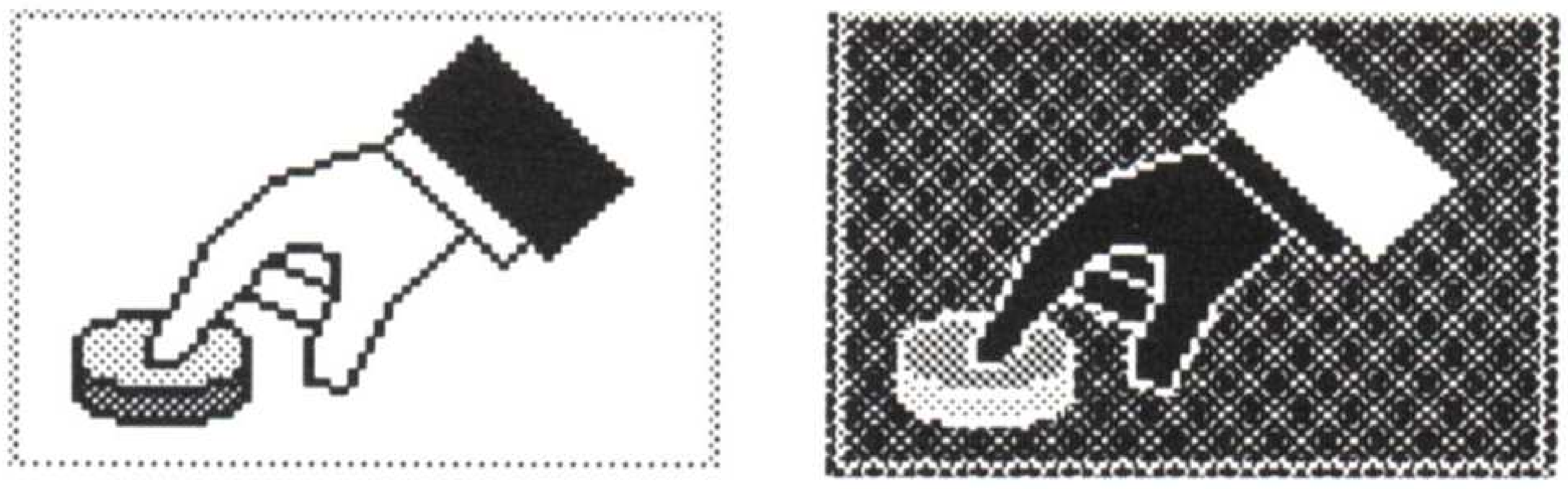


Figure 8-2 A Oneshot Hotspot

Creating Toggle Hotspots

You can create a button that behaves like a check box, only it is non-displayed. These are called toggle hotspots. A toggle hotspot turns on and off each time you click on it. When it is on, it is highlighted; when it is off, highlighting turns off.

- **To create a toggle hotspot:**

1. Select the hotspot.
2. Choose Hotspot Highlight Toggle.

Creating a Group of Hotspots

You can create a group of buttons that behave like option buttons but that are non-displayed. These are called hotspot groups. Only one hotspot in the group can highlight at a time. When one hotspot in the group turns on, the one that was on turns off. You are allowed up to three groups.

■ **To create a group:**

1. Select the hotspot.
2. Choose one of the Hotspot Highlight Group options.
3. Choose the same group item for each hotspot in the group.

Showing Non-Displayed Hotspots

■ **To outline hotspots at the Author level:**

Choose View Outline Hotspots.

or

Choose View Outline All Objects.

Making a Hotspot Conditional on Text

Hotspots are active by default, that is, their actions execute when you click on them. You can make a hotspot inactive, depending on whether or not there is text on up to three areas of the screen. When you point to an inactive hotspot at the Browse level, the cursor does not change to the hotspot cursor and no actions execute.

There are several reasons why you might want to make a hotspot inactive. For example, you might want to make a hotspot inactive if there is no drill-down data available or to prevent a blank document object cell from being used as a hotspot.

Making a Hotspot Conditional on Text

■ **To make a hotspot conditional on text:**

1. Select the hotspot.
2. Choose Hotspot Text Required.

   The screen changes to Point mode.

3. Select the area(s) where text must be present in order for the hotspot to be active.

   You can select multiple cells and up to three separate cell ranges.

4. When you are finished, choose OK! on the menu bar.

Example

Figure 8-3 shows an example property management screen that allows you to drill-down to more information, if the information is available.

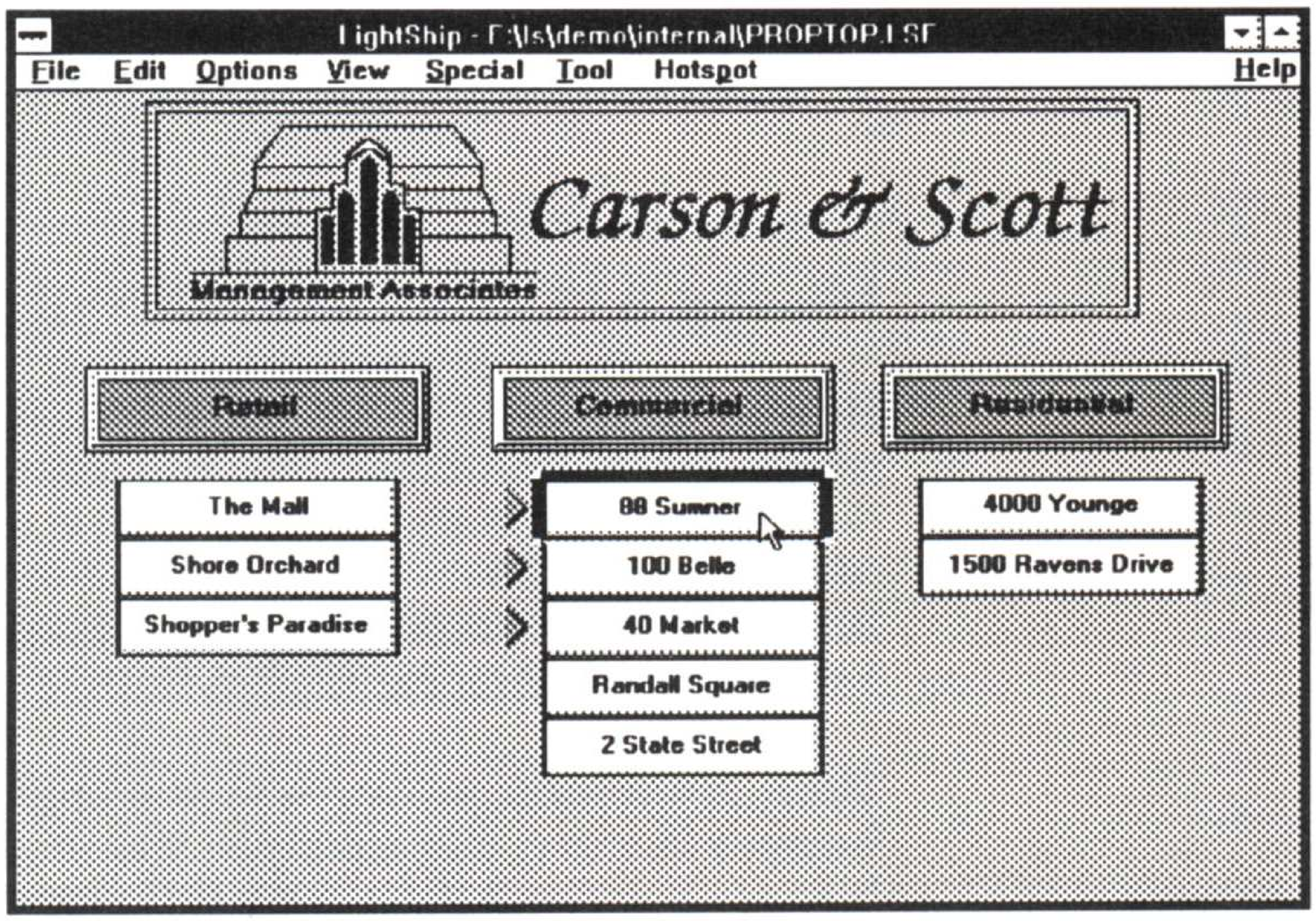
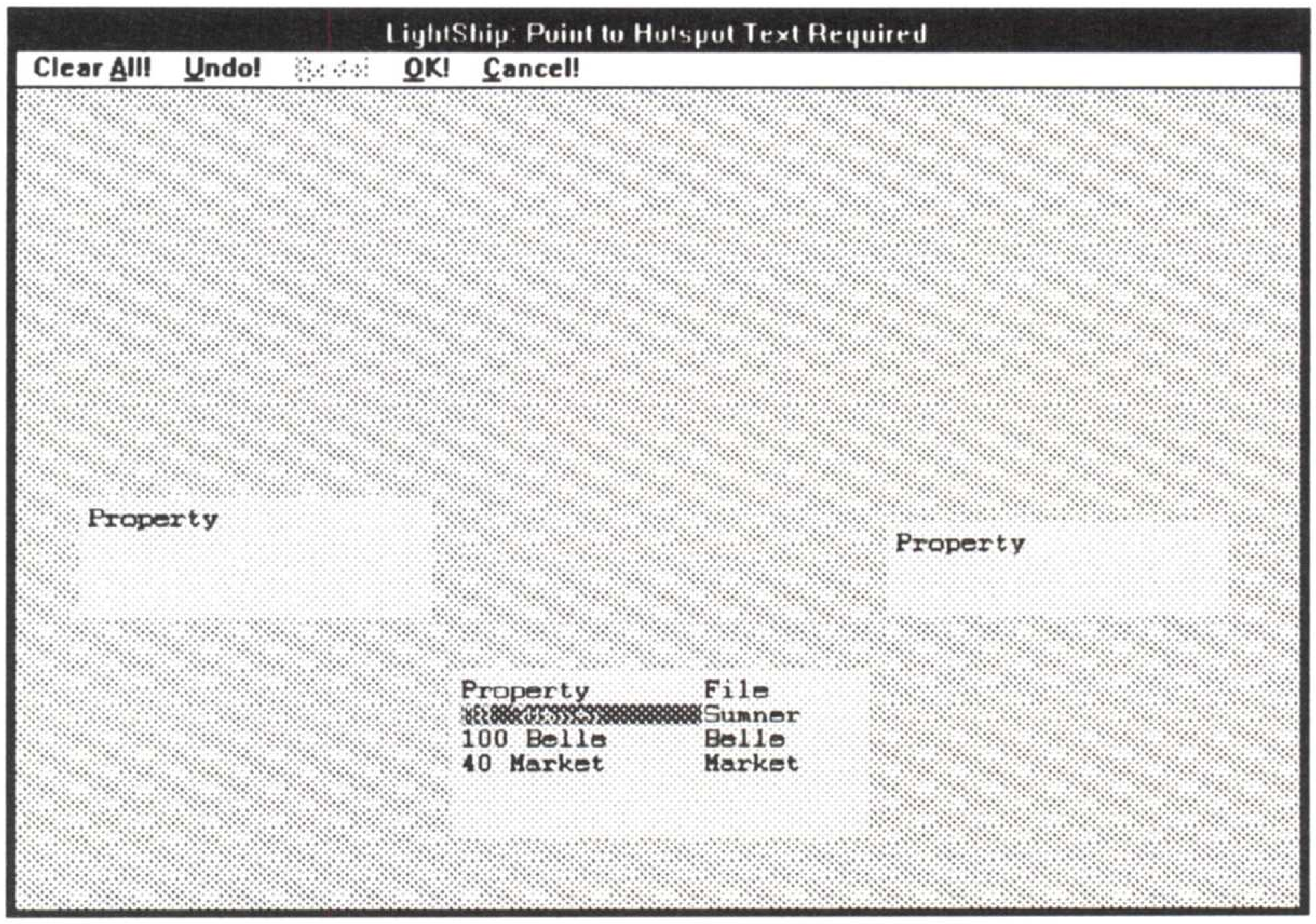


Figure 8-3 Push Button Hotspots with Text Required

The hotspot shown selected in Figure 8-3 points to a hidden document object that lists the files for different properties, as shown in Figure 8-4.


LightShip: Point to Hotspot Text Required
Clear All! Undo! OK! Cancel!
Property
Property

Property	File
[illegible]	Sumner
100 Belle	Belle
40 Market	Market

Figure 8-4 Pointing to Required Text

Because Text Required points to text in the list, the hotspot's actions will execute. The actions display a document object with information about the property. The actions also point to text in the hidden document object shown in Figure 8-4, which is used for a filename and caption.

Dimming an Inactive Hotspot

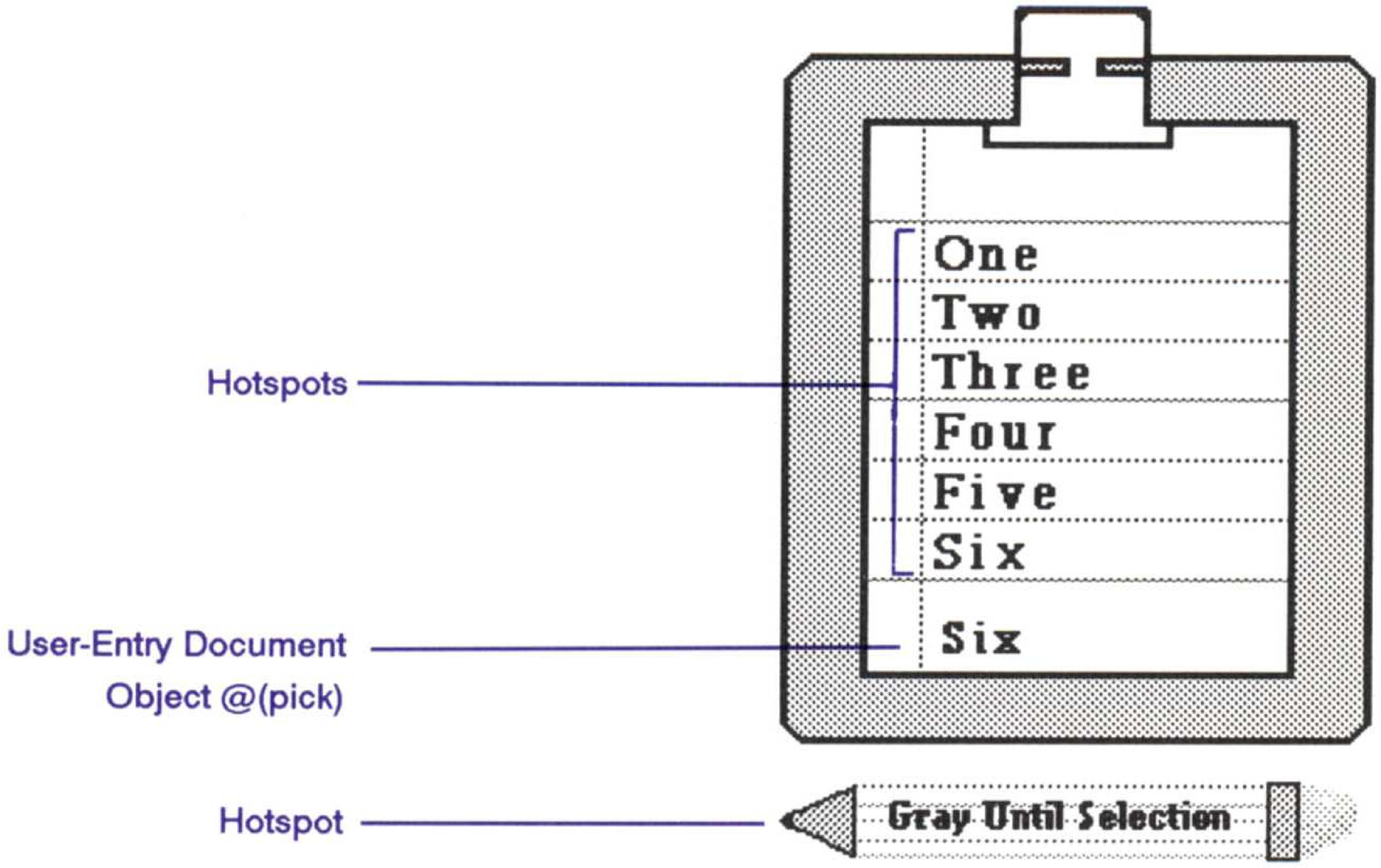
When Text Required is on, you have the option of making a hotspot unavailable by turning on Hotspot Dim If Inactive. When the text that is required does not exist and Dim If Inactive is on, button-style hotspots disappear. For non-displayed hotspots, any object underneath the hotspots dims.

■ To dim a hotspot:

Choose Dim If Inactive.

Example

This is an example of dimming an inactive hotspot.



In this example, each of the numbers in the list has a hotspot over it. No actions are defined for any of the hotspots. When you click on a number in the list, the number is assigned to a parameter called *pick*. The number you click on displays in a user-entry document that contains a reference to @(*pick*).

The pencil image also has a hotspot over it with no actions defined. Text Required is on and points to the user-entry document object that displays the value of @(*pick*). Dim if Inactive is also on for this hotspot. When the pencil is active and you click on it, it sets *pick* to a null value, which makes the document object blank. The required text is not there, so the text on the pencil dims.

Placing a Hotspot in Front of a Document Object

You can place a hotspot in front of a document object and use functions to return information from the cells that you click on. You can return the cell value with MOUSETEXT, you can return the row with MOUSEROW, and you can return the column with MOUSECOLUMN. To use these functions:

- The hotspot must be in front of the document object.
- The hotspot must the same size or slightly smaller than the document object.
- The document object must be defined as having columns.

For more information on other functions to use to return cell values, see "Returning Document Cell Values," in *Chapter 9: Defining Actions*.

When you place a hotspot in front of a document object, you might want to use Hotspot Text Required to prevent a blank cell from being active. You can point to text in the same document object or a separate document object. If you point to a range of cells that is not the same size as the document object behind the hotspot, LightShip uses the same rules as when two function arguments are different sizes. For more information, see "Using Cell Ranges as Arguments," in *Chapter 9: Defining Actions*.

Changing the Cursor

When you point to a hotspot at the Browse level, the cursor changes to a hand by default. You can change the cursor by using your own cursor file or you can use the pointer, if desired. The cursor file must conform to the Windows 3.0 Cursor Resource File format, which has a .CUR extension.

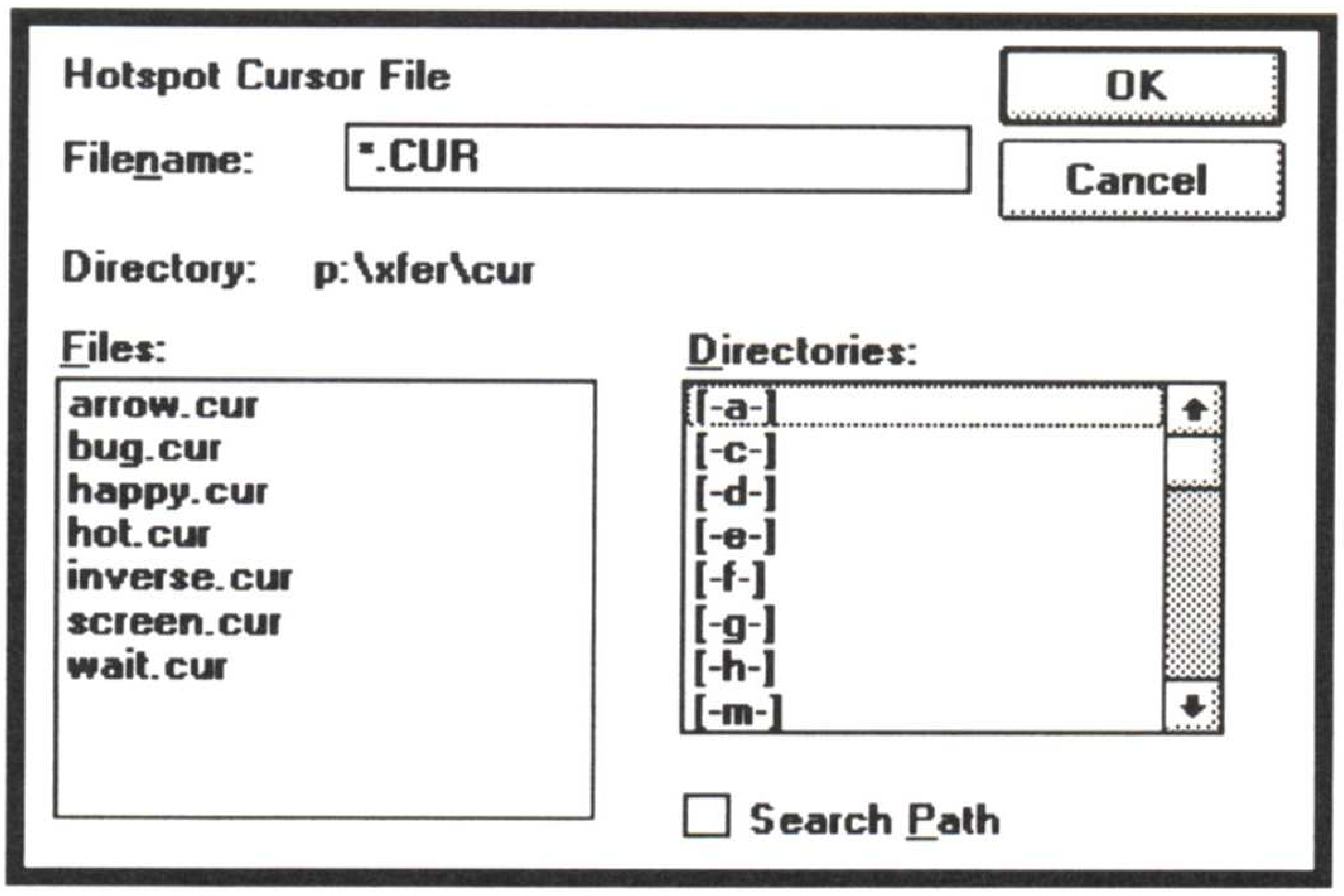
When you specify a cursor file for a hotspot, it is only active for that one hotspot. You can specify a default cursor file for all hotspots on the Preferences dialog box. For more information about the View Preferences command, see the *LightShip Reference Guide*.

To Specify a Cursor File

To specify another cursor file:

1. Select the hotspot.
2. Choose Hotspot Cursor File.

   A dialog box appears.



Hotspot Cursor File

Filename: *.CUR

Directory: p:\xfer\cur

Files:
arrow.cur
bug.cur
happy.cur
hot.cur
inverse.cur
screen.cur
wait.cur

Directories:
[-a-]
[-c-]
[-d-]
[-e-]
[-f-]
[-g-]
[-h-]
[-m-]

☐ Search Path

Figure 8-5 Selecting a Hotspot Cursor File

3. Enter the cursor filename.
4. Choose OK.

Specifying the Pointer Cursor

To use the pointer cursor:

1. Select the hotspot.
2. Choose Hotspot Cursor None.

Resetting the Default Cursor

The LightShip default cursor for hotspots is the hand icon. Unless you have specified a different cursor file on the Preferences dialog box, resetting the default cursor file makes the hand icon the hotspot cursor.

■ **To reset the default cursor:**

1. Select the hotspot.
2. Choose Hotspot Cursor Default.

* * *

Chapter 9

Defining Actions

This chapter discusses how hotspot and menu actions work. For information on specific actions or functions, see the *LightShip Reference Guide*.

What is an Action?

Actions are operations that hotspots or menu objects execute at the Browse level. You can define actions to:

- Activate Windows programs or execute DOS commands.
- Control calculations.
- Enter comments.
- Copy to the Clipboard.
- Perform DDE Requests and Executes.
- Display the retrace path.
- Execute a menu object.
- Write to a file.
- Perform numeric and string functions.
- Perform logical and relational operations.
- Assign and pass parameter values.
- Open files and define the retrace path.
- Print the screen.
- Return to a previous screen.
- Save a file as a permanent or temporary file.
- Execute scroll commands.
- Exit from LightShip.
- Pause for a specified number of seconds.
- Repaint the screen.

This adds the action above the line selected in the Actions box. Depending on the action you select, another dialog box might appear. For example, if you choose *Open File - Add to Retrace Path*, the Open File Action dialog box appears.

5. You can keep adding actions by selecting them from the list and choosing Insert.
6. When you are finished, choose OK.

Changing Actions

To change an action in the Actions box, you must first select it. You can select multiple actions by dragging the mouse over them or by selecting the first action and then holding down SHIFT and selecting the last action.

Editing an Action

- **To edit an action that was specified on a dialog or text box:**

1. Select the action in the Actions box.
2. Choose Replace.

   A dialog or text box for that action appears.

3. Make the changes.
4. Choose OK.

Replacing an Action

- **To replace an action in the Actions box with a new action:**

1. Select the action you want to replace in the Actions box.

Executing a Menu

Use the *Execute Menu* action to call any type of menu object. The called menu object can execute up to 250 actions and returns control to the calling object.

■ To execute a menu:

1. From the Action dialog box, select *Execute Menu* and choose Insert.

   The Execute Menu Action dialog box appears.

2. Type the name of the menu object that you want to call in the Menu Bar text box.

3. If the menu object has a menu item, type the name in the Menu Item text box.

⁂

For example, the < (Less than) operation shown below asks the question "Is *a* less than *b*?" If the condition flag is false, the actions within the *If* block are executed:

```
a < b
If False Begin
      ...
If End
```

For numeric functions, the condition flag is set to true if the numbers have non-zero values. For string functions, the condition flag is set to true if the strings have any characters.

All functions set a condition flag; however, you might use the following functions most frequently to set a flag:

= (Equals)
<> (Not Equal?)
< (Less than?)
> (Greater than?)
>=(Greater or equal?)
AND
OR
NOT
CONTAINS
EXISTS
Copy/Test

Condition flags should be scalar. Otherwise, LightShip uses the last cell value in the result variable as the condition flag.

Using Don't Store Result

Condition flags do not require you to store their results, although you can if desired. LightShip remembers the result until the next action is executed. Use the Don't Store Result option on the Function Action dialog box when you perform a conditional test and there is no other use for the result.

Reordering Action Objects

■ **To reorder the objects:**

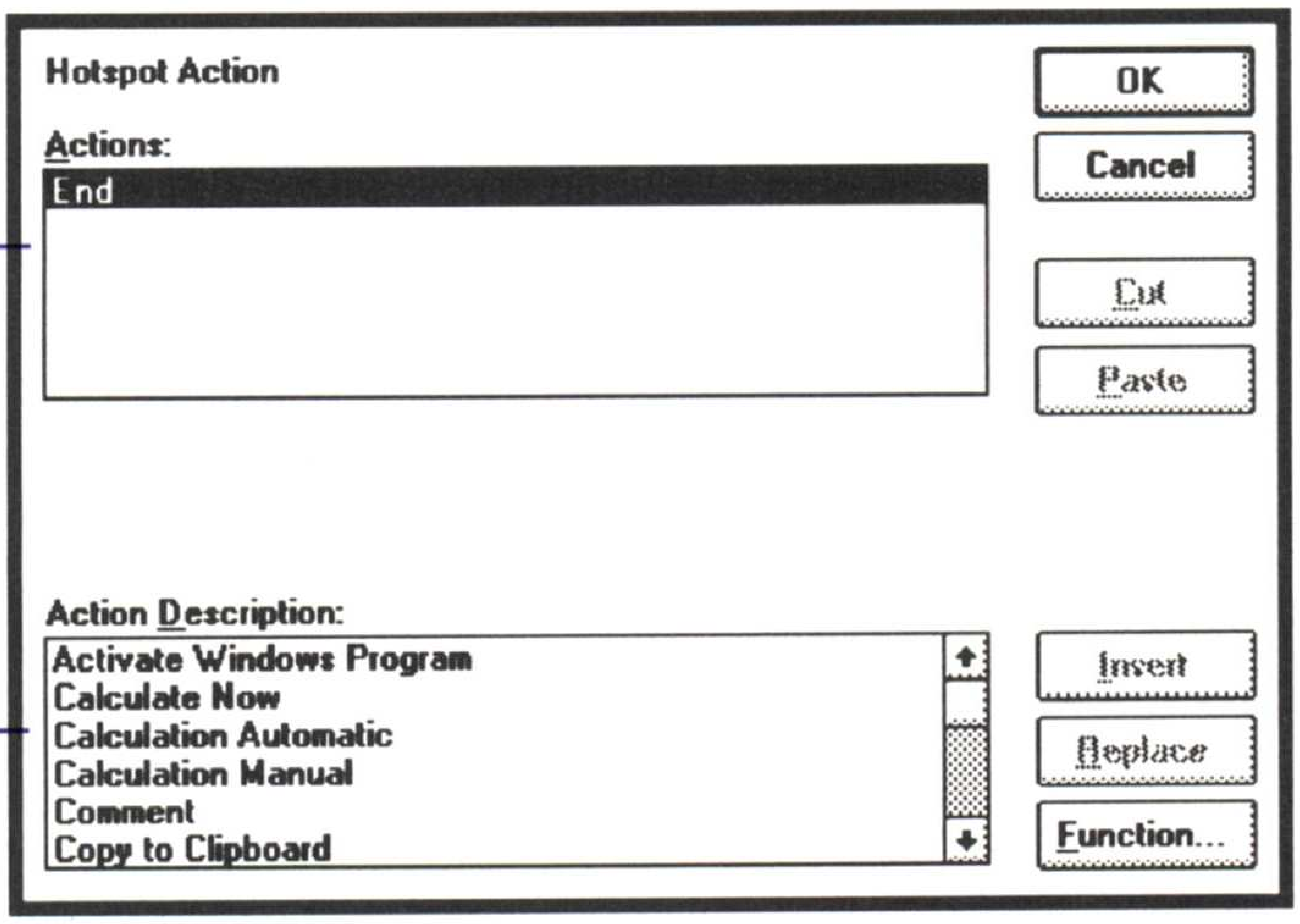
1. First select the object by pressing CTRL+UP ARROW or CTRL+DOWN ARROW.
2. Then use the Special Send and Bring commands to control where the objects are in relation to each other.

Defining Actions

■ **To define actions:**

1. Select the hotspot or menu object.
2. Choose Actions from the object menu.

   A dialog box appears.



Select Actions to Edit Here

Select New Actions Here

Figure 9-1 The Actions List Box Displays the Actions for the Object

3. Select the action in the Action Description box.
4. Choose the Insert button.

Defining Loops

You can define loops so that actions are carried out repeatedly. Loops must begin with a *Loop Begin* action and end with an *Loop End* action. For example:

```
Loop Begin
      action
      action
      ...
Loop End
```

Termination Conditions

There are three ways to control an exit from a loop:

- *Loop Exit*
- *Loop Exit If True*
- *Loop Continue*

You must always use a *Loop Exit* or *Loop Exit If True* action before a *Loop End* action to exit from a loop. *Loop Continue* does not cause an exit, but it allows you to control the exit condition.

Loop Exit

Loop Exit allows you to exit from a loop when a condition flag is true or false, and to perform some action(s) before exiting. You must insert a conditional action, such as an *If True Begin* or *If False Begin* action, before *Loop Exit*. Then enter the action(s) you want to perform. You must insert the *Loop Exit* before the *If End* action.

2. Select the new action in the Action Description box.
3. Choose Replace.

Deleting Actions

■ **To delete action(s):**

1. Select the action(s) in the Actions box.
2. Choose Cut.

Copying and Moving Actions

You can copy actions within the same action list and to another object's action list.

■ **To copy or move action(s):**

1. Select the action(s) in the Actions box.
2. Choose Cut.
3. Select the object you want to paste the action to, if it's not the current object, and choose Actions from that object's menu.
4. Select the action below the step where you want to paste the action.
5. Choose Paste.

Conditional Actions

Condition Flags

You can perform action(s) based on a *condition flag*. A condition flag is the true or false result of a function. All LightShip functions produce a condition flag.

Loop Continue

Loop Continue sends control back to the *Loop Begin* action. You must insert a conditional action, such as an *If True Begin* or an *If False Begin*, before a *Loop Continue* action and end the block with an *If End*. When the inverse of the *Loop Continue* condition is true, LightShip executes the actions that follow the *If End* action until LightShip encounters a *Loop Exit*.

You can use *Loop Continue* to evaluate a condition flag before looping, or you can use it to branch to another part of the loop when some condition is met. For example, the following actions set *x1*, *x2*, and *x3* to 1, 2, and 3 and return *x* to 1:

```
x := 1
Loop Begin
      x@(x) := x
      x := x + 1
      x <= 3
      If True Begin
            Loop Continue
      If End
      x := 1
      Loop Exit
Loop End
```

What is a Function?

The Function Action dialog box lists all functions available for strings and numbers. A *function* takes a value or values, performs an operation on them, and returns a value. The values that you give to a function are called *arguments*. Arguments can be single-cell or multi-cell containers. The value that the function returns is called the *result variable*, which can also be a single-cell or multi-cell container.

LightShip provides both numeric and string functions. The difference between them is how the inputs are interpreted by LightShip.

Conditional Actions

The following conditional actions must follow a condition flag:

- *If True Begin*
- *If False Begin*
- *Loop Exit If True*

You must end an *If True Begin* and an *If False Begin* block with an *If End* action. If you use *If True Begin* and the test is false, or if you use *If False Begin* and the test is true, LightShip executes the next action after *If End*, unless there is an *If Else* action within the block.

You can branch to other action(s) by inserting an *If Else* action, if desired. For instance, the first action in the following example asks the question "Is count >= level?" and sets the condition flag to true or false. If the flag is true, the actions following the *If True Begin* action execute, and if the flag is false, the actions following the *If Else* action execute.

```
count>=level
If True Begin
        action
        ...
If Else
        action
        ...
If End
```

The Copy/Test function, on the other hand, assigns a value to a variable:

```
counter := 1
```

This expression sets *counter* to the value one.

Expressions

An expression is a combination of operators and operands, for example, functions, strings, and variables. The values that you give to a function are called arguments to the function.

You can use three types of function arguments:

- Variables
- Literals
- Point to a document cell value

Variables

A variable can be any variable name you type or select from the list in the Function Action dialog box. You can also type a variable reference, which will be evaluated before the function is performed.

Literals

A literal can be any number or string that you type in the Argument text box.

LightShip assumes that any string on the right side of an assignment operator in the Function Action dialog box is a variable, if it is not in quotes and follows the rules for a legal variable name. If it is not a variable defined in LightShip, LightShip substitutes a null value. For example, in the assignment statement below, LightShip assumes that *temp* is a variable because it begins with a character, has no spaces in it, and is less than 20 characters.

```
tempkey:=temp
```

For example, the following actions set *x1*, *x2*, and *x3* to 1, 2, and 3 and return *x* to 1:

```
x := 1
Loop Begin
    x@(x) := x
    x := x + 1
    x > 3
    If True Begin
        x := 1
        Loop Exit
    If End
Loop End
```

Loop Exit If True

Loop Exit If True combines an *If True Begin* action with a *Loop Exit* action. Use *Loop Exit If True* when you want to test for a true condition and then exit immediately.

You must insert a condition flag before a *Loop Exit If True*. If the condition flag is true, LightShip exits from the loop. For example, the following actions set *x1*, *x2*, and *x3* to 1, 2, and 3 and return *x* to 1:

```
x := 1
Loop Begin
    x@(x) := x
    x := x + 1
    x > 3
    Loop Exit If True
Loop End
x := 1
```

Relationship Between Cell Ranges

Two arguments can have the following relationships to each other:

- One-to-one, where the arguments have equal data
- One-to-many, where one argument is a scalar for the other argument
- Many-to-many, where the arguments have unequal data

☞ Important

If you select a blank cell when pointing to a function argument, LightShip treats this as a zero for numeric functions and as a blank (null value) for string functions.

One-to-One

A one-to-one relationship occurs when both arguments have the same number of rows and columns. LightShip matches the cell in Row 1 Column 1 (R1C1) of the first argument to the cell in R1C1 of the second argument, and so on. The result is returned into R1C1 of the result variable.

The following example shows concatenation where both arguments have an equal number of rows and columns.

Argument 1	
A	B
C	D

Argument 2	
1	7
2	8

Result	
A1	B7
C2	D8

One-to-Many

In a manner similar to a one-to-one relationship, if one argument is a single number and the other argument points to multiple numbers, the single number acts as a scalar for each of the other argument's values. The result container is the same size as the larger argument.

The following example shows concatenation where the first argument is a single cell that is concatenated to all cells in the second argument.

For operations that return Boolean results and for condition flags for all functions, strings are checked for characters (length) and numerics are checked for a zero or non-zero value. Zeros and nulls are interpreted as false and non-zero and non-null values are interpreted as true.

How Function Actions are Displayed

LightShip displays functions in the Function Action dialog box, which opens from the Action dialog box.

The Result Variable

The result variable appears on the left side of an assignment statement as shown:

```
variable := expression
```

This variable contains the results of the function. It must be a variable or a reference to a variable, for example, *@(item)*. References to variables are always evaluated first, before the operation is performed.

Assignment Operator

The assignment operator (:=) means "assign the value of" and should not to be confused with an equivalence operator (=). For example, (=) Equal is a relational operation that returns a Boolean value to the result variable:

```
result := counter = 1
```

This operation asks the question "Does *counter*=1?" If *counter*=1, *result* is assigned the value 1. If *counter*<>1, *result* is assigned the value zero. If you choose not to store the result, it appears as:

```
counter = 1
```

Argument 1
A
B
C

Argument 2	
1	7
2	8
3	5

Result	
A1	A7
B2	B8
C3	C5

Returning Document Cell Values

There are many functions you can use to return information about the value in a document object cell. The functions listed below are especially useful for finding the value in a cell, or the row and column number of a cell on which you click. Note that the MOUSE functions require that you place a hotspot in front of the document object and then define the function for that hotspot.

- Use MOUSETEXT to return the cell value on which you click at the Browse level.
- Use MOUSEROW to return the row number of the cell on which you click at the Browse level.
- Use MOUSECOLUMN to return the column number of the cell on which you click at the Browse level.
- Use Copy/Test to return cell value(s) whose position(s) you have selected using the Point option.
- Use FETCH to return the value of a cell that you specify by row and column numbers.
- Use STORE to return a value into a cell that you specify by row and column number.

To guarantee that LightShip correctly interprets strings and variables on the right side of an assignment operator (in the Function Action dialog box), we recommend enclosing strings in double quotes (" "), for example:

```
tempkey:="temp"
```

To include double quotes in a string, you must type two of them. For example:

```
tempkey:=""temp""
```

evaluates to:

```
"temp"
```

Point

You can point to one or more cell values in a document object. For more information about pointing to document object data, see "Using Cell Ranges as Arguments."

Using Cell Ranges as Arguments

You can use single-cell or multi-cell containers or document objects as function arguments. This section discusses how rows and columns behave when you use them as arguments.

Selecting Data in Columns

To select data from multiple *columns*, the document object must have Document Layout Columns turned on and a column delimiter defined. If you select multiple rows and columns without a column delimiter defined, LightShip interprets each row as one cell and you will get unexpected results. For information about defining columns, refer to *Chapter 4: Displaying Data*.

You can type in strings or variables in the text box, select variables from the drop-down list, or you can point to document object cells by choosing the Point button. For information about how to assign values by pointing, see *Chapter 10: Using Variables and Parameters*. For information about how cell ranges relate to each other when used as function arguments, see "Using Cell Ranges as Arguments."

Enclose strings in double quotes.

■ **To enter a null string, type:**

""

■ **To select a variable from the list:**

- Click the down arrow next to the Argument(s) text box.
- Select the variable.

4. Define the result variable.

   You can type a variable name or a variable reference, or select a variable from the list. References to variables are always evaluated first, before the operation is performed.

   ■ **To select a variable from the list:**

   - Click the down arrow next to the Result Variable text box.
   - Choose the variable.

5. Choose OK.

Argument 1
A

Argument 2	
3	4
	5

Result	
A3	A4
A	A5

Many-to-Many

When one argument has less rows or columns than the other argument, the smaller argument's rows or columns are reused to match the additional rows and columns of the larger argument. This repeats until the result's container is the same size as the larger argument.

The following example shows concatenation where the first argument has less rows than the second argument. The first argument's row is concatenated to the first and second rows of the second argument.

Argument 1	
A	B

Argument 2	
1	7
2	8

Result	
A1	B7
A2	B8

The same is true for columns. The following example shows concatenation where the first argument has more columns than the second argument. The last column of the first argument is concatenated to the first column of the second argument to return a container of the same size as the larger argument.

When Actions are Executed

Hotspots

A hotspot's actions are executed when you click on it at the Browse level.

Menu Objects

Any menu object's actions can be executed by an *Execute Menu* action at the Browse level. In addition:

- A menu-bar menu object's actions execute when you choose a menu item at the Browse level.
- An event-driven menu object's actions execute when the event occurs at any level.

Controlling the Order of Execution

You can define up to 250 actions for each object in the Action dialog box. Actions execute in the order in which they are listed, unless the order is changed by a conditional action.

Parameters are assigned before the first action is carried out. One way to pass parameters that have been changed by actions is to use an *Execute Menu* action to call another menu object and assign the parameters there.

If you place two or more hotspots or menu objects over each other, their action(s) execute in the order in which they are placed, from front to back. That is, the action of the object that is closest to the front is carried out first.

Any actions that follow an *Open File* or a *Return in Path* action are not executed. These actions cause control to transfer to the called screen.

For more information about using hotspots in front of document objects, see *Chapter 8: Creating Hotspots*. For more information about a specific function, see *Chapter 10* in the *LightShip Reference Guide*.

Defining a Function

■ **To define a function:**

1. Select *Function* from the Action Description box in the Action dialog box and choose Insert.

   Or

   Choose the Function button.

   A dialog box appears, shown in Figure 9-2. The string functions are listed by default. To define a numeric function, choose Numeric. The numeric functions appear in the Operation list box.

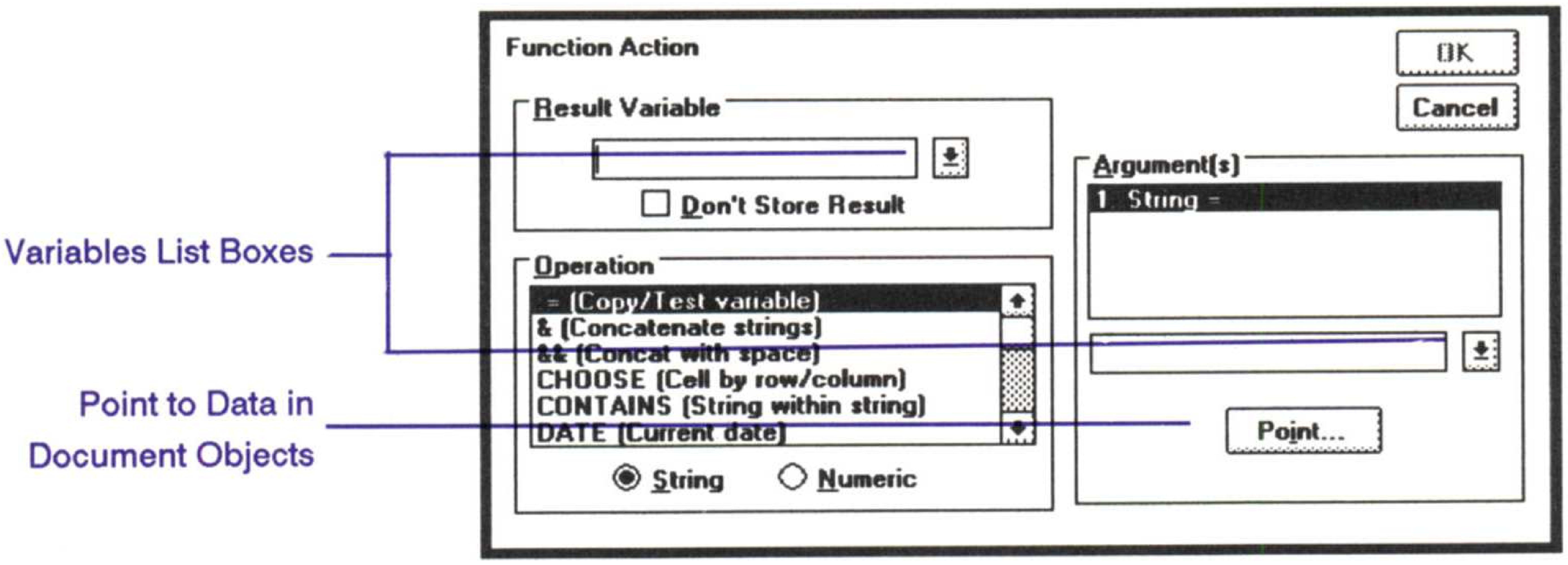


Figure 9-2 Defining Functions

2. Select the function in the Operation list box.

   A prompt for the arguments appears.

3. Define the arguments.

This adds the action above the line selected in the Actions box. Depending on the action you select, another dialog box might appear. For example, if you choose *Open File - Add to Retrace Path*, the Open File Action dialog box appears.

5. You can keep adding actions by selecting them from the list and choosing Insert.

6. When you are finished, choose OK.

Changing Actions

To change an action in the Actions box, you must first select it. You can select multiple actions by dragging the mouse over them or by selecting the first action and then holding down SHIFT and selecting the last action.

Editing an Action

To edit an action that was specified on a dialog or text box:

1. Select the action in the Actions box.

2. Choose Replace.

   A dialog or text box for that action appears.

3. Make the changes.

4. Choose OK.

Replacing an Action

To replace an action in the Actions box with a new action:

1. Select the action you want to replace in the Actions box.

When Actions are Executed

Hotspots

A hotspot's actions are executed when you click on it at the Browse level.

Menu Objects

Any menu object's actions can be executed by an *Execute Menu* action at the Browse level. In addition:

- A menu-bar menu object's actions execute when you choose a menu item at the Browse level.
- An event-driven menu object's actions execute when the event occurs at any level.

Controlling the Order of Execution

You can define up to 250 actions for each object in the Action dialog box. Actions execute in the order in which they are listed, unless the order is changed by a conditional action.

Parameters are assigned before the first action is carried out. One way to pass parameters that have been changed by actions is to use an *Execute Menu* action to call another menu object and assign the parameters there.

If you place two or more hotspots or menu objects over each other, their action(s) execute in the order in which they are placed, from front to back. That is, the action of the object that is closest to the front is carried out first.

Any actions that follow an *Open File* or a *Return in Path* action are not executed. These actions cause control to transfer to the called screen.

For example, the < (Less than) operation shown below asks the question "Is *a* less than *b*?" If the condition flag is false, the actions within the *If* block are executed:

```
a < b
If False Begin
    ...
If End
```

For numeric functions, the condition flag is set to true if the numbers have non-zero values. For string functions, the condition flag is set to true if the strings have any characters.

All functions set a condition flag; however, you might use the following functions most frequently to set a flag:

= (Equals)
<> (Not Equal?)
< (Less than?)
> (Greater than?)
>=(Greater or equal?)
AND
OR
NOT
CONTAINS
EXISTS
Copy/Test

Condition flags should be scalar. Otherwise, LightShip uses the last cell value in the result variable as the condition flag.

Using Don't Store Result

Condition flags do not require you to store their results, although you can if desired. LightShip remembers the result until the next action is executed. Use the Don't Store Result option on the Function Action dialog box when you perform a conditional test and there is no other use for the result.

You can type in strings or variables in the text box, select variables from the drop-down list, or you can point to document object cells by choosing the Point button. For information about how to assign values by pointing, see *Chapter 10: Using Variables and Parameters*. For information about how cell ranges relate to each other when used as function arguments, see "Using Cell Ranges as Arguments."

Enclose strings in double quotes.

To enter a null string, type:

""

To select a variable from the list:

- Click the down arrow next to the Argument(s) text box.
- Select the variable.

4. Define the result variable.

   You can type a variable name or a variable reference, or select a variable from the list. References to variables are always evaluated first, before the operation is performed.

   To select a variable from the list:

   - Click the down arrow next to the Result Variable text box.
   - Choose the variable.

5. Choose OK.

Defining Loops

You can define loops so that actions are carried out repeatedly. Loops must begin with a *Loop Begin* action and end with an *Loop End* action. For example:

```
Loop Begin
    action
    action
    ...
Loop End
```

Termination Conditions

There are three ways to control an exit from a loop:

- *Loop Exit*
- *Loop Exit If True*
- *Loop Continue*

You must always use a *Loop Exit* or *Loop Exit If True* action before a *Loop End* action to exit from a loop. *Loop Continue* does not cause an exit, but it allows you to control the exit condition.

Loop Exit

Loop Exit allows you to exit from a loop when a condition flag is true or false, and to perform some action(s) before exiting. You must insert a conditional action, such as an *If True Begin* or *If False Begin* action, before *Loop Exit*. Then enter the action(s) you want to perform. You must insert the *Loop Exit* before the *If End* action.

Argument 1
A
B
C

Argument 2	
1	7
2	8
3	5

Result	
A1	A7
B2	B8
C3	C5

Returning Document Cell Values

There are many functions you can use to return information about the value in a document object cell. The functions listed below are especially useful for finding the value in a cell, or the row and column number of a cell on which you click. Note that the MOUSE functions require that you place a hotspot in front of the document object and then define the function for that hotspot.

- Use MOUSETEXT to return the cell value on which you click at the Browse level.
- Use MOUSEROW to return the row number of the cell on which you click at the Browse level.
- Use MOUSECOLUMN to return the column number of the cell on which you click at the Browse level.
- Use Copy/Test to return cell value(s) whose position(s) you have selected using the Point option.
- Use FETCH to return the value of a cell that you specify by row and column numbers.
- Use STORE to return a value into a cell that you specify by row and column number.

Loop Continue

Loop Continue sends control back to the *Loop Begin* action. You must insert a conditional action, such as an *If True Begin* or an *If False Begin*, before a *Loop Continue* action and end the block with an *If End*. When the inverse of the *Loop Continue* condition is true, LightShip executes the actions that follow the *If End* action until LightShip encounters a *Loop Exit*.

You can use *Loop Continue* to evaluate a condition flag before looping, or you can use it to branch to another part of the loop when some condition is met. For example, the following actions set *x1*, *x2*, and *x3* to 1, 2, and 3 and return *x* to 1:

```
x := 1
Loop Begin
    x@(x) := x
    x := x + 1
    x <= 3
    If True Begin
        Loop Continue
    If End
    x := 1
    Loop Exit
Loop End
```

What is a Function?

The Function Action dialog box lists all functions available for strings and numbers. A *function* takes a value or values, performs an operation on them, and returns a value. The values that you give to a function are called *arguments*. Arguments can be single-cell or multi-cell containers. The value that the function returns is called the *result variable*, which can also be a single-cell or multi-cell container.

LightShip provides both numeric and string functions. The difference between them is how the inputs are interpreted by LightShip.

Relationship Between Cell Ranges

Two arguments can have the following relationships to each other:

- One-to-one, where the arguments have equal data
- One-to-many, where one argument is a scalar for the other argument
- Many-to-many, where the arguments have unequal data

☞ Important

If you select a blank cell when pointing to a function argument, LightShip treats this as a zero for numeric functions and as a blank (null value) for string functions.

One-to-One

A one-to-one relationship occurs when both arguments have the same number of rows and columns. LightShip matches the cell in Row 1 Column 1 (R1C1) of the first argument to the cell in R1C1 of the second argument, and so on. The result is returned into R1C1 of the result variable.

The following example shows concatenation where both arguments have an equal number of rows and columns.

Argument 1	
A	B
C	D

Argument 2	
1	7
2	8

Result	
A1	B7
C2	D8

One-to-Many

In a manner similar to a one-to-one relationship, if one argument is a single number and the other argument points to multiple numbers, the single number acts as a scalar for each of the other argument's values. The result container is the same size as the larger argument.

The following example shows concatenation where the first argument is a single cell that is concatenated to all cells in the second argument.

The Copy/Test function, on the other hand, assigns a value to a variable:

```
counter := 1
```

This expression sets *counter* to the value one.

Expressions

An expression is a combination of operators and operands, for example, functions, strings, and variables. The values that you give to a function are called arguments to the function.

You can use three types of function arguments:

- Variables
- Literals
- Point to a document cell value

Variables

A variable can be any variable name you type or select from the list in the Function Action dialog box. You can also type a variable reference, which will be evaluated before the function is performed.

Literals

A literal can be any number or string that you type in the Argument text box.

LightShip assumes that any string on the right side of an assignment operator in the Function Action dialog box is a variable, if it is not in quotes and follows the rules for a legal variable name. If it is not a variable defined in LightShip, LightShip substitutes a null value. For example, in the assignment statement below, LightShip assumes that *temp* is a variable because it begins with a character, has no spaces in it, and is less than 20 characters.

```
tempkey:=temp
```

Chapter 10

Using Variables and Parameters

This chapter explains how to create and use variables and parameters.

Variables and Parameters

Variables

A *variable* is a container you create by naming it and assigning to it a string or numeric value, as shown:

```
key = product
```

where "key" is the variable name and "product" is the value assigned to it. Variables can contain single cells or rows and columns. For example, the following variable contains one row with four columns:

```
keys = product | channel | region | city
```

Whenever you use a variable name preceded by an atsign (@) and enclosed in parentheses, LightShip substitutes the value of the variable. This is called referencing variables, or variable substitution.

Parameters

Hotspots and menu objects can assign new values to variables and pass them to other LightShip screens. When a variable's value changes, we call it a *parameter*. When we talk about "passing parameters," we mean assigning a new value to a variable on the current screen or passing a variable to another screen.

Kinds of Variables

There are two kinds of variables:

Local Variables	Local variables are only available to the screen in which they are created, unless they are passed to another screen with an Open File action. They are saved with the screen.
Global Variables	Global variables are available to all screens within one instance of LightShip. They are deleted when you exit from LightShip unless you specifically save them. Global variables use an ampersand (&) as the first character of their names, for example, *&item*.

Assigning Values

Variables are updated when an event or action occurs that changes their values. The ways you can initialize and update variables are listed in "Ways to Assign Values."

The Calculation commands affect when variables are updated. When Calculation Automatic is on, changes in variable values are updated immediately. When Calculation Manual is on, variables are not updated unless you issue a Calculate Now command.

If you turn Calculation Automatic off, and then turn it on again, LightShip updates all parameter values that have been changed on the screen since you turned Calculation Automatic off or issued the last Calculate Now command.

The value of a variable at the last assignment remains the current value until it is changed. If you close and reopen a file, the value of all variables will be the same as when you last saved the file, unless you specifically reinitialize them when LightShip starts or when the screen opens.

Order of Assignment

The order in which you assign values in a dialog box is not important. Assignments occur concurrently. For more information, see "Defining and Passing Parameters" and "An Example Using Variables and Parameters."

Ways to Assign Values

There are five ways to assign values to variables:

1. **The Special Variables command**

   This opens the Variables dialog box, which you usually use to initialize variables. This dialog box displays the current values of all variables, unless you specify otherwise.

2. **The Hotspot or Menu Parameters commands**

   These commands open the Hotspot or Menu Action Parameters dialog boxes, where you can type in assignment(s) that occur when the hotspot or menu is executed at the Browse level. For more information, see "Defining and Passing Parameters."

   To reinitialize local and global variables every time you open a file, create an &&Open menu object. &&Open is a special menu object that sets parameters and carries out the action associated with it when the file opens. Use the Menu Parameters command to assign parameter values or use the Menu Actions command to define a function that produces a result variable. For more information about &&Open, see "Creating Event-Driven Menu Objects" in *Chapter 7: Creating Menu Objects*.

3. **The Hotspot Actions or Menu Actions commands**

   These commands open the Hotspot or Menu Action dialog boxes, where you can define functions that assign values to variables.

4. **In LS.INI**

   Assign values to global variables in the [Globals] section of LS.INI to reinitialize them every time you start LightShip. For example:

   ```
   &PATH = C:\LS\;C:\LS\DEMO;
   ```

   For more information about LS.INI, see *Appendix B: LS.INI Options*.

5. **The DOS or Windows command line**

   Use this option to initialize both local and global variables. For example:

   ```
   \ls /b \top.lsf &Logan="user"
   ```

   For more information, see "Passing Parameters from Windows or DOS."

Limits and Legal Values

Values

You can assign numbers, characters, quoted strings, variable names, or variable references, for example, @*(actual)*, to variables and parameters. Variable values are limited to 4,000 characters.

To include an atsign in a variable value, you must enter it twice, for example, @@.

Strings do not need to be quoted in the Special Variables, Hotspot Parameters, or Menu Parameters dialog boxes. Strings do need to be quoted in the Function Action dialog box.

Names

Variable names are limited to 20 characters. They must begin with an alphabetic character, an underscore (_), or an ampersand (&).

Parameters

You can pass 50 parameters between screens at one time. Hotspot and menu objects are allowed 20 parameters per object.

Saving Global Variables

Global variables are deleted by default when you exit LightShip. To save them, turn on the Save Globals option in the View Preferences dialog box. When this option is on, any global variables you define in the Variables dialog box are saved in LS.INI, which reinitializes them every time LightShip starts.

Creating Variables

You create variables in the Special Variables dialog box, which displays the current values of all global and local variables, unless you specify otherwise. Note that parameter values do not display in the Variables dialog box until an action has assigned the new value.

Column delimiters display as a single bar (|) and row delimiters display as two bars (||). To add a value in a new column, press CTRL+TAB and then type the value. To add a value in a new row, press CTRL+ENTER and then type the value.

Local and Global Variables

Use the Global and Local check boxes on the Special Variables dialog box to control the creation and display of local and global variables in the dialog box. When both Local and Global are on, LightShip assumes the variable is local unless you type an ampersand as the first character. If only Global is on, LightShip adds an ampersand at the beginning of the variable name. If only Local is on, LightShip will remove an ampersand from the first character of a variable name.

☞ **Hint**

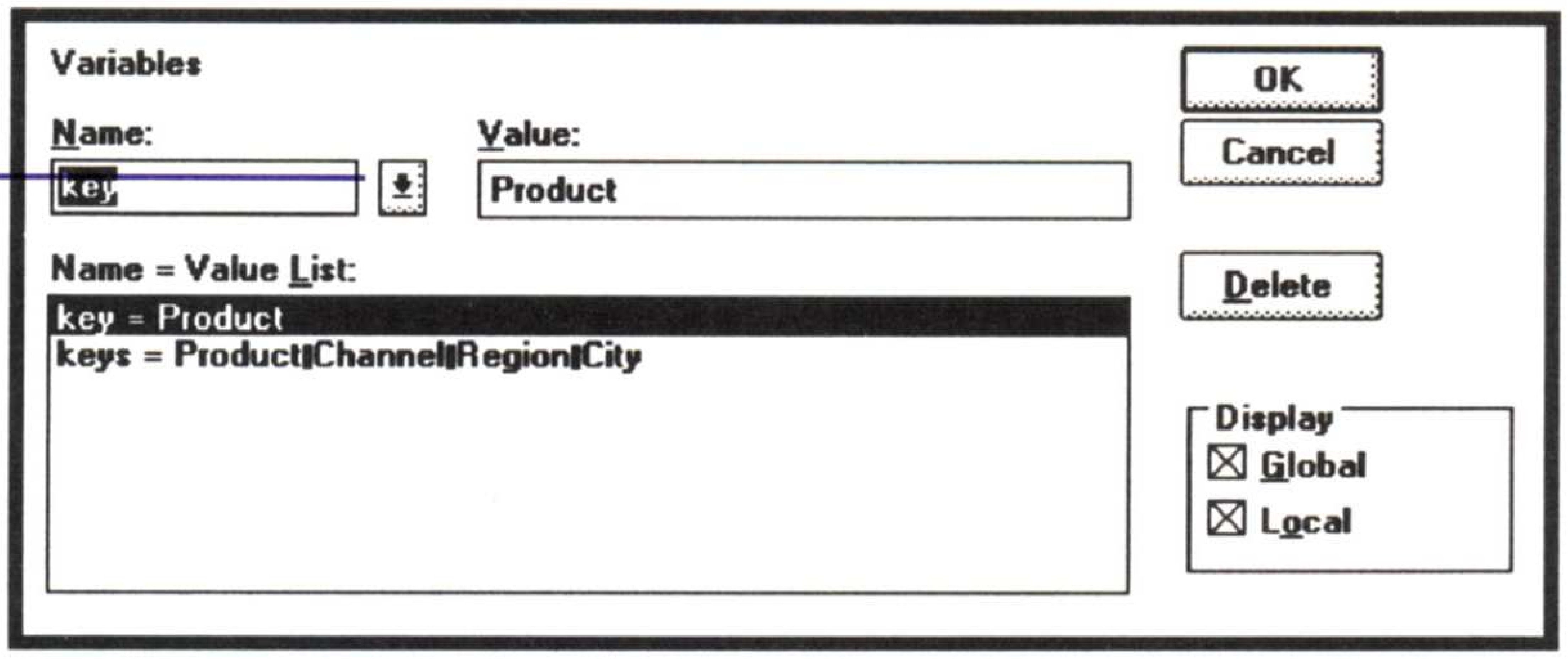
A quick way to create a multi-cell variable is to create a user-entry document object and type a variable reference in it. Then go to the Browse level and type the values. Remember to press CTRL+TAB between columns and CTRL+ENTER between rows. The values you enter are assigned to the variable.

Creating Variables

■ To create a variable:

1. Choose Special Variables.

   A dialog box appears.



Name: key

Value: Product

Name = Value List:

key = Product
keys = Product‖Channel‖Region‖City

This Drop-Down Box Lists All Existing Variables

Figure 10-1 Creating Variables

2. Type the variable name in the Name text box or click the down arrow next to the Name text box and select a name from the list.

3. Press the TAB key or click in the Value text box.

4. Type the variable value.

5. To add another variable or edit the one you just entered, do not press ENTER. Press SHIFT+TAB to go back to the text box on the left.

6. When you are finished, choose OK.

Editing Variables

■ **To edit a variable:**

1. Choose Special Variables.

   The Variables dialog box appears.

2. Select the variable.

   It appears in the text boxes at the top of the dialog box.

3. Click in the text box you want to change.
4. Type the new name or value.
5. When you are finished, choose OK.

Deleting Variables

■ **To delete a variable:**

1. Choose Special Variables.

   The Variables dialog box appears.

2. Select the variable.

   It appears in the text boxes at the top of the dialog box.

3. Choose Delete.
4. When you are finished, choose OK.

Defining and Passing Parameters

You can assign new values to variables and pass them to other LightShip screens using hotspots and menu objects. You do not need to define an action to assign parameters. If there are actions associated with the object, values defined on the Action Parameters dialog box are assigned immediately before the actions are carried out.

You can also use functions to assign values to variables. For example, Copy/Test performs a simple variable assignment and MOUSETEXT assigns a document object cell value that you click on to a variable.

Assigning Values with No Action

To only assign parameter values and perform no other action, assign the parameter value(s) on the Action Parameters dialog box.

Passing Parameters Between Screens

To pass parameters to other screens, choose any of the Open File actions or the *Return in Retrace Path* action. Then assign the parameter value(s) on the Action Parameters dialog box.

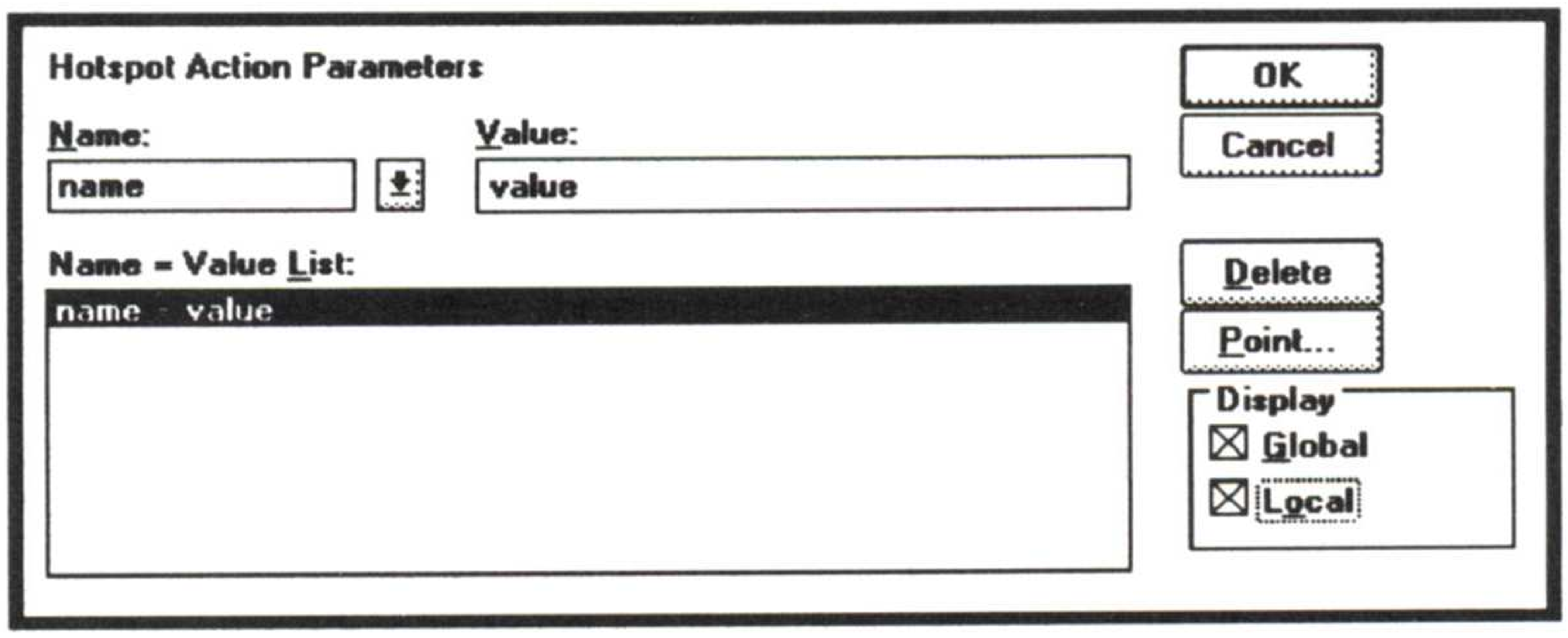
Defining Parameters

■ **To define parameters on the Hotspot or Menu Action Parameters dialog box:**

1. Create or select a hotspot or menu object.
2. Define the action(s).
3. Choose Hotspot Parameters or Menu Parameters.

   The Action Parameters dialog box appears for the selected object.

☞ To change an existing parameter, click on it. It appears in the text boxes where you can edit it.



Name: name

Value: value

Name = Value List: name = value

☒ Global

☒ Local

Figure 10-2 Defining Hotspot and Menu Parameters

4. Type the parameter name in the Name text box or click the down arrow next to the Name text box and select a parameter name from the list.

5. Press TAB to move to the Value text box.

6. Type the value.

7. To type another parameter or edit the name you just entered, do not press ENTER. Press SHIFT+TAB to go back to the Name text box.

8. When you are finished, choose OK.

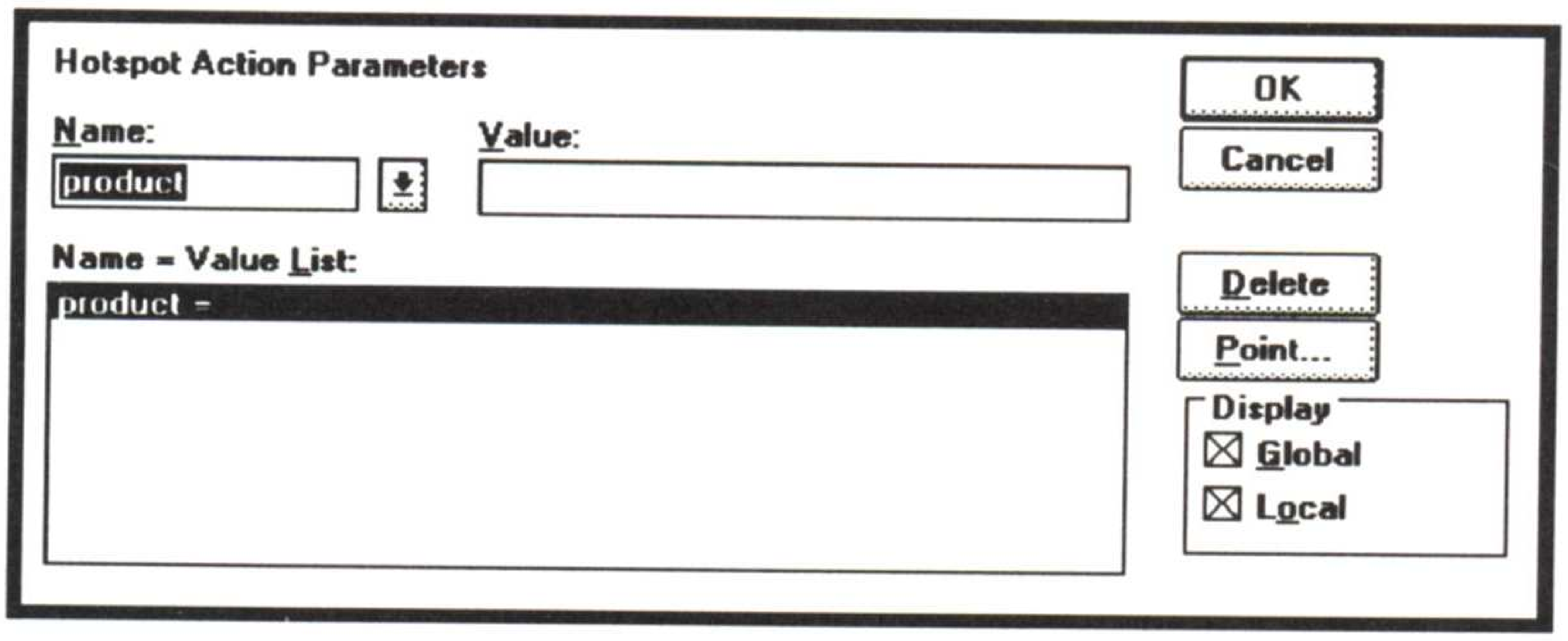
Assigning Values by Pointing

You can assign a parameter value by pointing to a cell or rows and columns in a document. To select data from multiple columns, the document object must have Document Layout Columns turned on and a column delimiter defined. If you select multiple rows and columns without a column delimiter defined, LightShip interprets each row as only one cell. For information on defining columns, refer to *Chapter 4: Displaying Data*.

Assigning a Value by Pointing

■ To assign a value by pointing:

1. Select a parameter in the list, type a name in the Name text box, or click on the down arrow next to the Name text box and select a parameter name from the list.



Hotspot Action Parameters

Name: product

Value:

Name = Value List:

product =

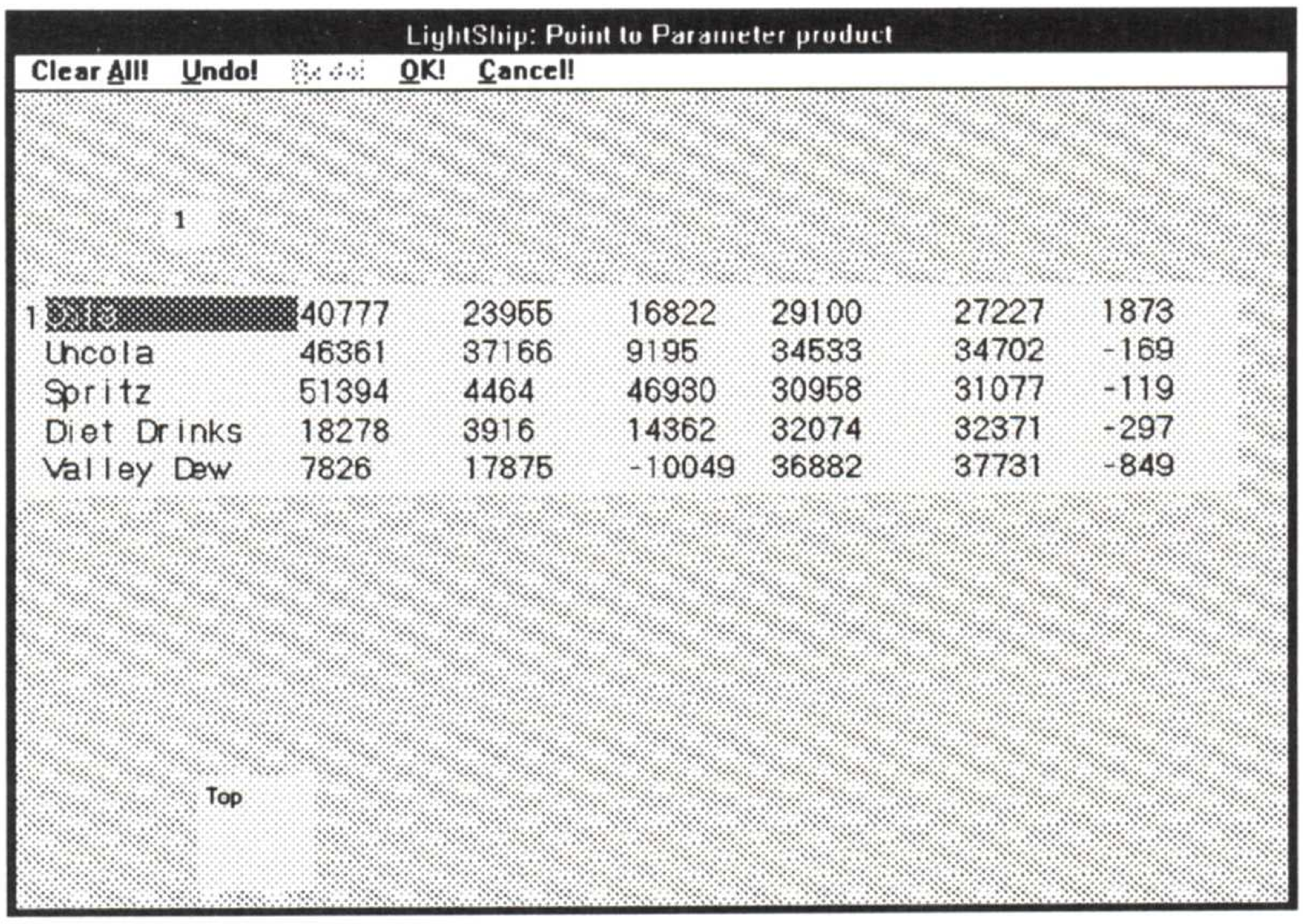
Figure 10-3 Defining a Parameter by Pointing

2. Press TAB or click in the Value box to enable the Point button.

3. Choose Point.

   The screen changes to Point mode, which lets you select data.

4. Drag the mouse over the value(s) you want to assign to the parameter.

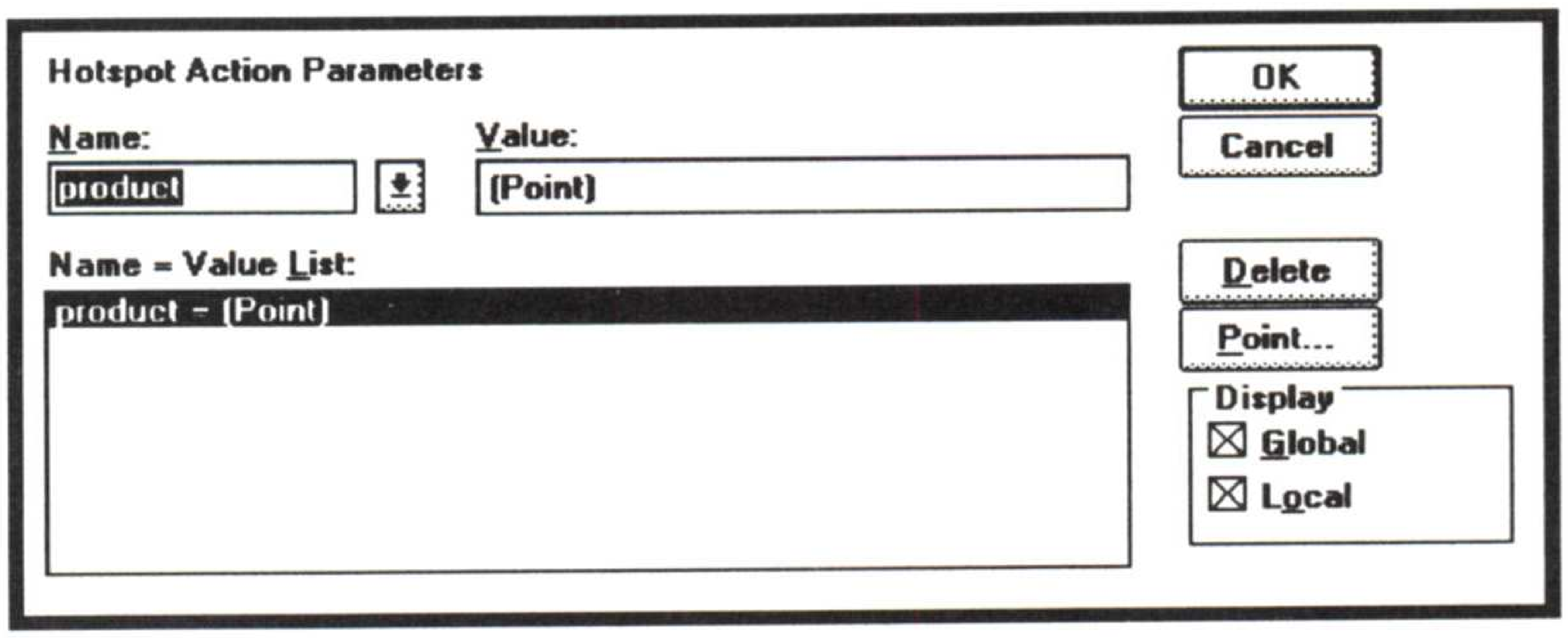


1	[illegible]	40777	23955	16822	29100	27227	1873
	Uncola	46361	37166	9195	34533	34702	-169
	Spritz	51394	4464	46930	30958	31077	-119
	Diet Drinks	18278	3916	14362	32074	32371	-297
	Valley Dew	7826	17875	-10049	36882	37731	-849

Figure 10-4 Pointing to a Value

5. Choose OK! on the menu bar.

   The Action Parameters dialog box appears again. When you point to a value, the parameter box displays the value as (Point).



Name: product

Value: (Point)

Name = Value List:
product = (Point)

☒ Global
☒ Local

Figure 10-5 Assigning a Value by Pointing

6. Choose OK.

Deleting Parameters

■ To delete a parameter assignment:

1. Choose Hotspot Parameters or Menu Parameters.
2. Select the parameter.

   It appears in the text boxes at the top of the dialog box.
3. Choose Delete.
4. When you are finished, choose OK.

   This deletes the parameter assignment but leaves the variable intact.

■ To delete a variable on the Action Parameters dialog box:

Assign a blank value to the parameter name.

Referencing Variables

Whenever you reference a variable, LightShip substitutes the reference with the value assigned to the variable. Variable substitution, which allows you to build dynamic screens and queries, is a key element of a LightShip application. New values are substituted only when you execute a hotspot or menu object.

Referencing Variables

You can reference variables almost anywhere that you can enter text, in text objects, user-entry document objects, or in any text box wide enough for four characters.

To reference a variable, precede it with an atsign and enclose it in parentheses. For example, suppose you are defining keys for a query. If you initialize the following variables in the Variables dialog box:

```
keys = Product | Channel | Region | City
key = Product
level = 1
```

Wherever you want to substitute the values, you would refer to them as:

```
@(keys)
@(key)
@(level)
```

LightShip substitutes:

```
Product | Channel | Region | City
Product
1
```

Indirect and Nested References

You can also use indirect and nested references to variables. For example, *@(key)* is an indirect reference to the variable *key* and *@(@key))* is a nested reference to the variable *key*. Suppose you have the following values:

```
key = Product
product = Cola
```

You can refer to:

```
@(key) = @(@(key))
```

and LightShip evaluates it to:

```
Product = Cola
```

LightShip evaluates from the inner-most parenthesis outwards. On the first pass through, *@(key)* is equal to "Product." Then LightShip evaluates product to equal "Cola."

Concatenating Strings

You can concatenate strings using:

- & (Concatenate strings) function
- && (Concat with space) function
- Variable references

Examples of Concatenate Functions

If key=level and number=1 then:

```
temp := key && number
```

evaluates *temp* to "level 1" and

```
temp := key & number
```

evaluates *temp* to "level1."

For more information on & (Concatenate strings)and && (Concat with space), see the *LightShip Reference Guide*.

Examples of Variable References

For example:

```
@(filename).LSF
```

evaluates to a filename with an .LSF extension.

If key = level and number = 1 then:

```
@(key)@(number)
```

evaluates to "level1."

If number = 1 and key1 = product then:

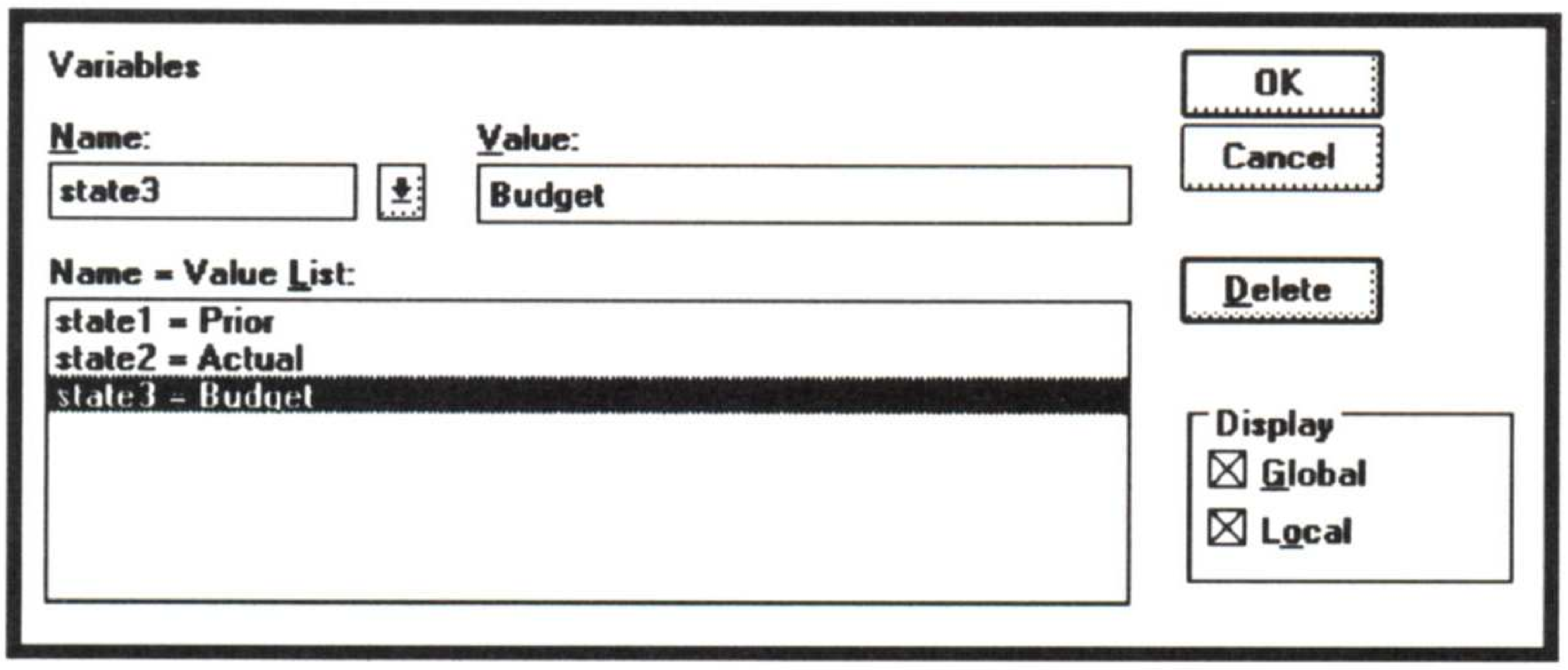
`@(key@(number))`

evaluates to "product."

An Example Using Variables and Parameters

This example shows a text object that toggles among three values. You might want to try it as an exercise.

We created and initialized three variables in the Variables dialog box, shown in Figure 10-6.



Name: state3

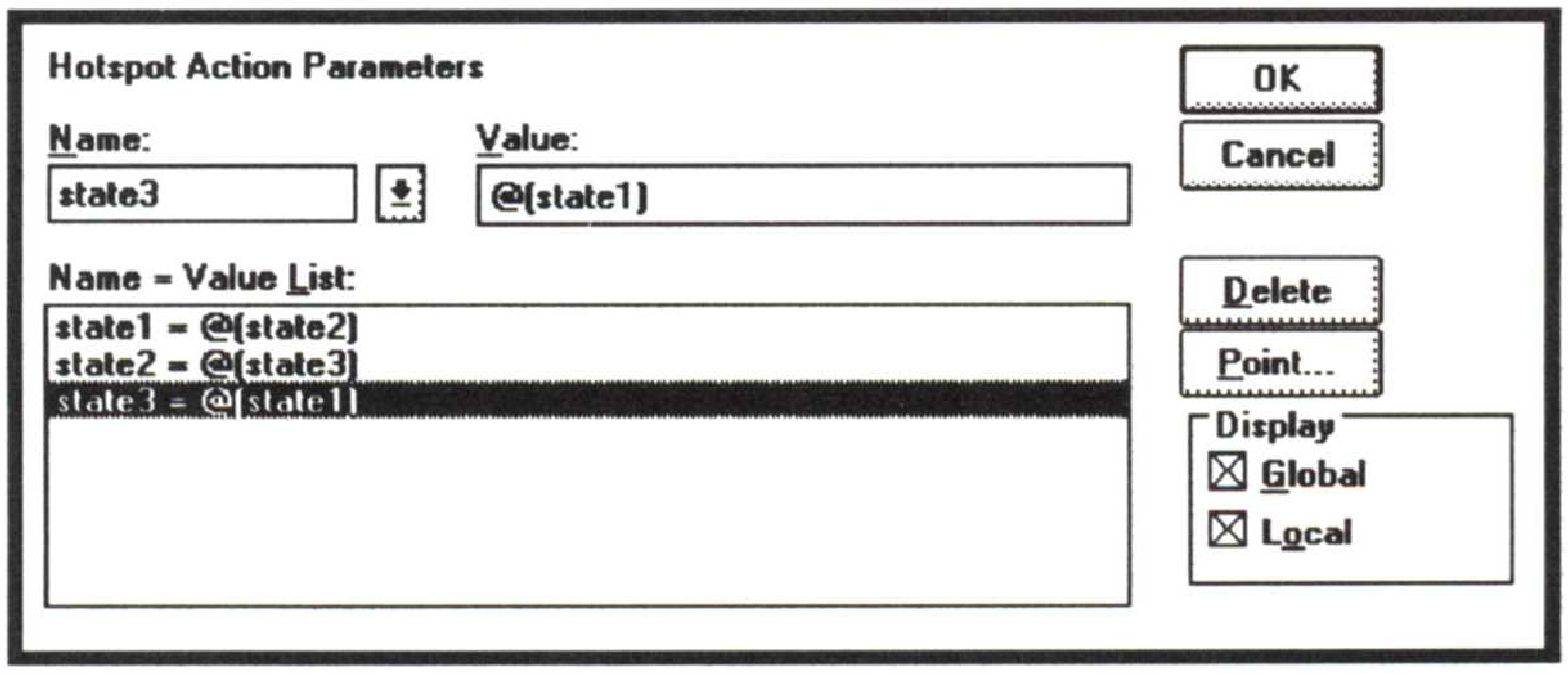
Value: Budget

Name = Value List:

state1 = Prior
state2 = Actual
state3 = Budget

Figure 10-6 Initializing Variables

Then we created a hotspot. We defined parameters with the same names as the variables we defined in Figure 10-6. We used variable references as values to cause the states of the variables to change.



Name: state3

Value: @(state1)

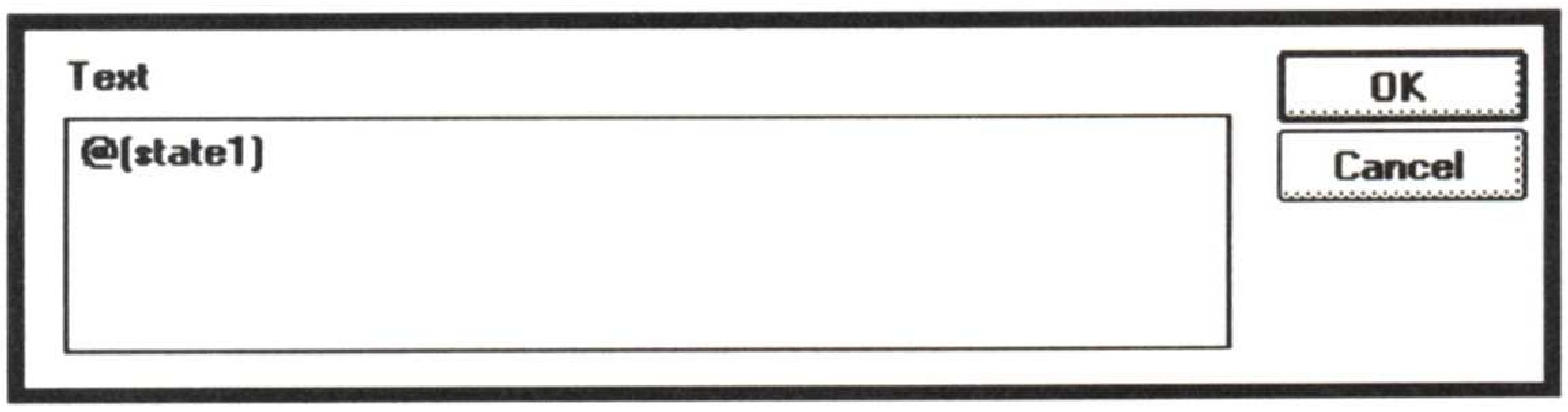
Name = Value List:
state1 = @(state2)
state2 = @(state3)
state3 = @(state1)

☒ Global
☒ Local

Figure 10-7 Defining Hotspot Parameters

The first value of *state1* is "Prior." Every time we click on the hotspot at the Browse level, the value of *state1*, *state2*, and *state3* changes.

Last, we created a text object that defined the text as *@(state1)* and placed it over the hotspot.

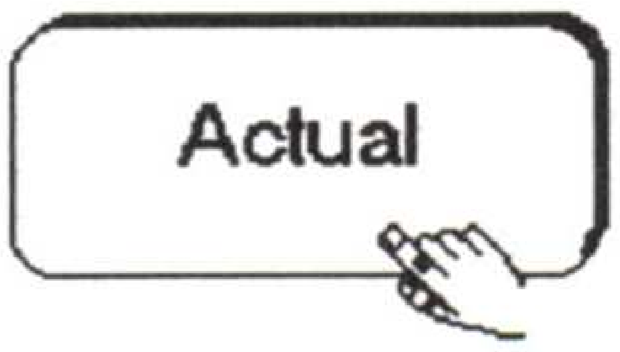


Text: @(state1)

Figure 10-8 Using a Parameter in a Text Object

When we go to the Browse level, each time we click on the hotspot, it displays one of the values - "Prior," "Actual," or "Budget."

State 1



State 2

State 3

Passing Parameters from Windows or DOS

You can pass parameters to a LightShip screen when you start LightShip from the DOS command line or the Windows File Run command using the following syntax:

```
ls <filename> <parameter1> <parameter2>...
```

For example:

```
\ls\ls \ls\top.lsf "Actual" "Budget"
```

You can pass parameters with or without a variable name. If you pass a parameter without a variable name, you must enclose it in double quotes, as shown above. If you do not assign a name on the command line, LightShip assigns the names *P1*, *P2*, *P3*, etc. *P1* refers to the first parameter on the command line, *P2* to the second parameter, and so on.

To assign variable names to values on the command line, use the following syntax:

```
ls <filename> <name>=<value>...
```

For example:

```
\ls\ls \ls\top.lsf item=Paper
```

Passing Special Characters

When passing parameters from the command line, spaces ( ), equal signs (=) that are not used for assigning values, and double quotes (") are treated as special characters. To pass any of these characters as parameters, you must put them inside double quotes.

For example, to pass the value "Actual Sales," you would type:

```
"""Actual Sales"""
```

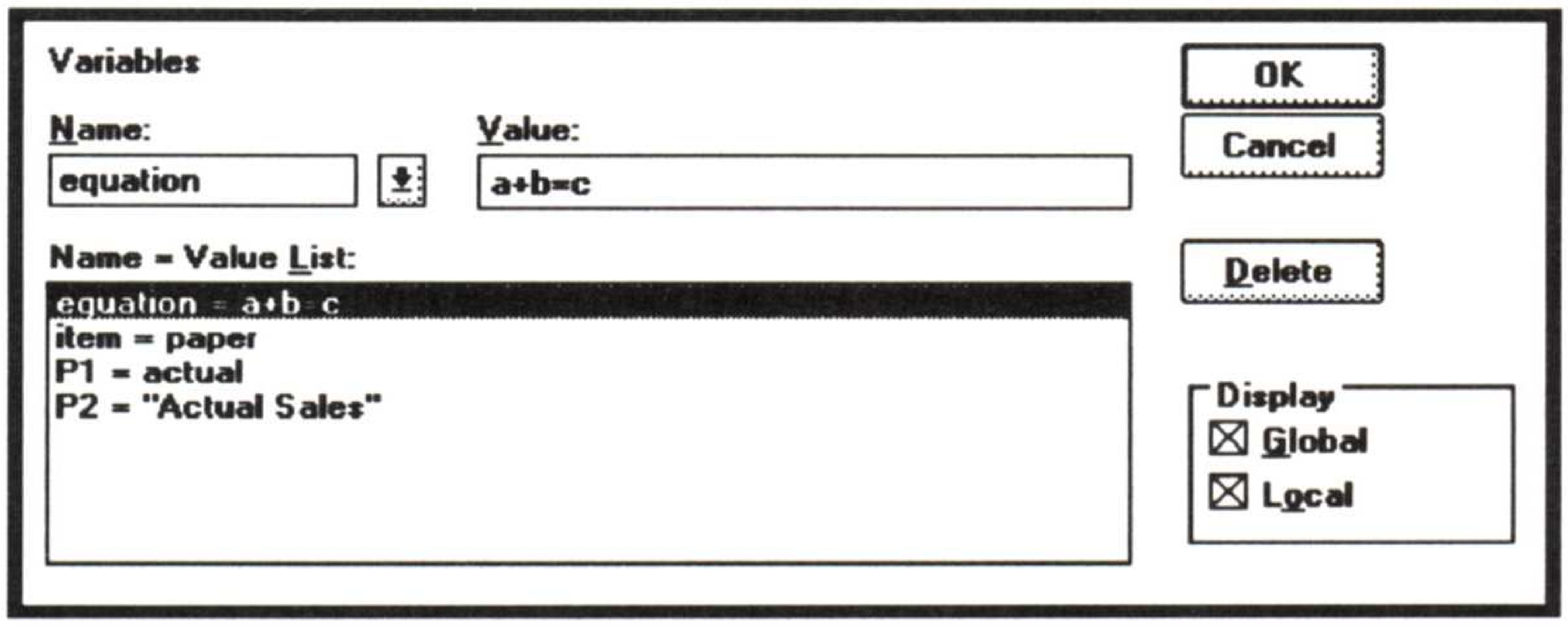
To pass equal signs, you would type:

```
equation="a+b=c"
```

Example

Figure 10-9 shows how the following parameters appear in the Variables dialog box:

```
"actual"
"""Actual Sales"""
item=paper
equation="a+b=c"
```



Name: equation

Value: a+b=c

Name = Value List:

equation = a+b=c
item = paper
P1 = actual
P2 = "Actual Sales"

Figure 10-9 Passing Parameters from the Command Line

⁂

Chapter 11

Running and Testing an Application

This chapter explains how to use LightShip at the Browse level and how to use LightShip's debugging features.

☞ Press the F4 key to move between the Browse and Author levels.

Running an Application

You run applications at the Browse level. Figure 11-1 shows the default Browse-level menu bar.

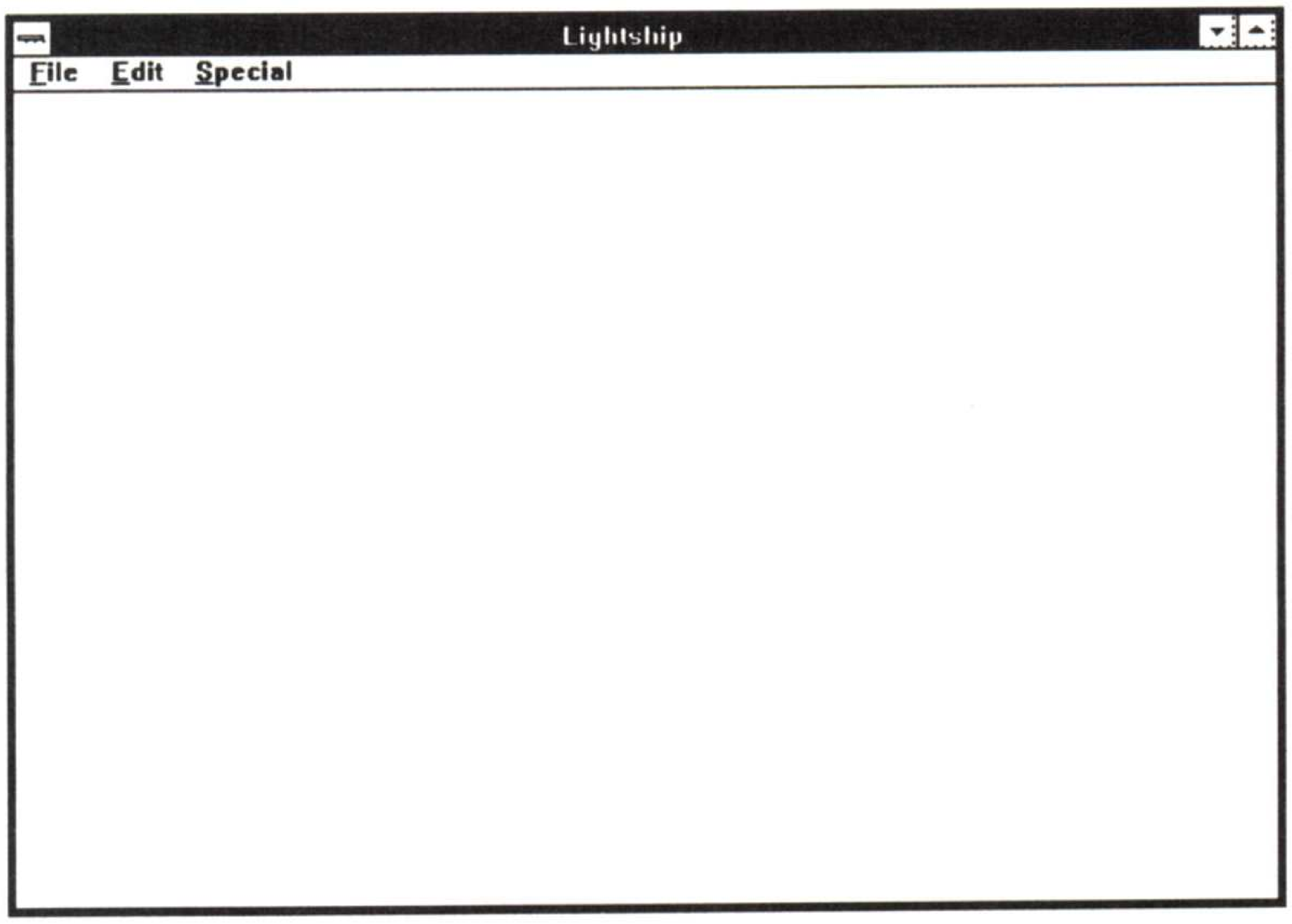


Figure 11-1 The Default Browse-Level Screen

Browse-Level Menu Bar

The LightShip Browse-level menu bar contains File, Edit, and Special menus. All the commands perform the same way as at the Author level, except the Copy command allows you to copy the entire screen without selecting it first.

Menu-bar menu objects that you create at the Author level normally appear on the menu bar to the right of the LightShip Browse menus, unless Options Hide Menu Bar is on.

Executing Actions

You execute actions at the Browse level by choosing a hotspot or menu item.

The cursor changes to a hand icon by default when you move it over a hotspot. You can change the cursor by specifying a cursor file for the hotspot. For more information, see *Chapter 8: Creating Hotspots*.

■ **To break out of actions that are executing:**

Press the ESC key.

Typing into User-Edit Documents

You can type into a user-entry document at the Browse level if Document User Edit is turned on for that object. If the document contains a variable reference, any value you type in is assigned to the variable and displays on the screen.

When you move the cursor over a user-edit document, the cursor changes to an I-beam. When you click in the document object, all the text is selected. To overwrite all the text, just start typing. To edit the text, click on the insertion point. The cursor changes to a flashing vertical bar. To add a new column, press CTRL+TAB. To add a new line, press CTRL+ENTER.

■ **To type in a user-edit document:**

1. Click in the document.
2. Type into the document.
3. When you are finished, press ENTER.

For information on creating user-edit document objects, see *Chapter 4: Displaying Data*.

Copying to the Clipboard

You can copy all or part of the screen to the Clipboard at the Browse level.

■ **To copy the entire screen:**

Choose Edit Copy or press CTRL+INS.

■ **To copy a portion of the screen:**

1. Drag the mouse over the area you want to copy.

   You see a dotted selection rectangle as you drag the mouse.

2. Choose Edit Copy or press CTRL+INS.

Testing an Application

You can use the Debug window to record information while running an application. You can list the following information at any time:

- Parameter values as they are assigned and referenced
- Actions as they are executed
- Information about objects
- RGB numbers of colors on the palette

☞ **Important**

To record information in the Debug window, you must open it before running an application. When you list new information in the Debug window, existing information displayed in the window is not updated. The new information is appended to the existing list, up to a fixed amount of lines. You might want to clear the window before listing new information.

Opening the Debug Window

■ **To open the Debug window:**

Choose Special Debug.

The screen changes to the LightShip Debug window shown in Figure 11-2. The window is blank if you have not executed any actions.

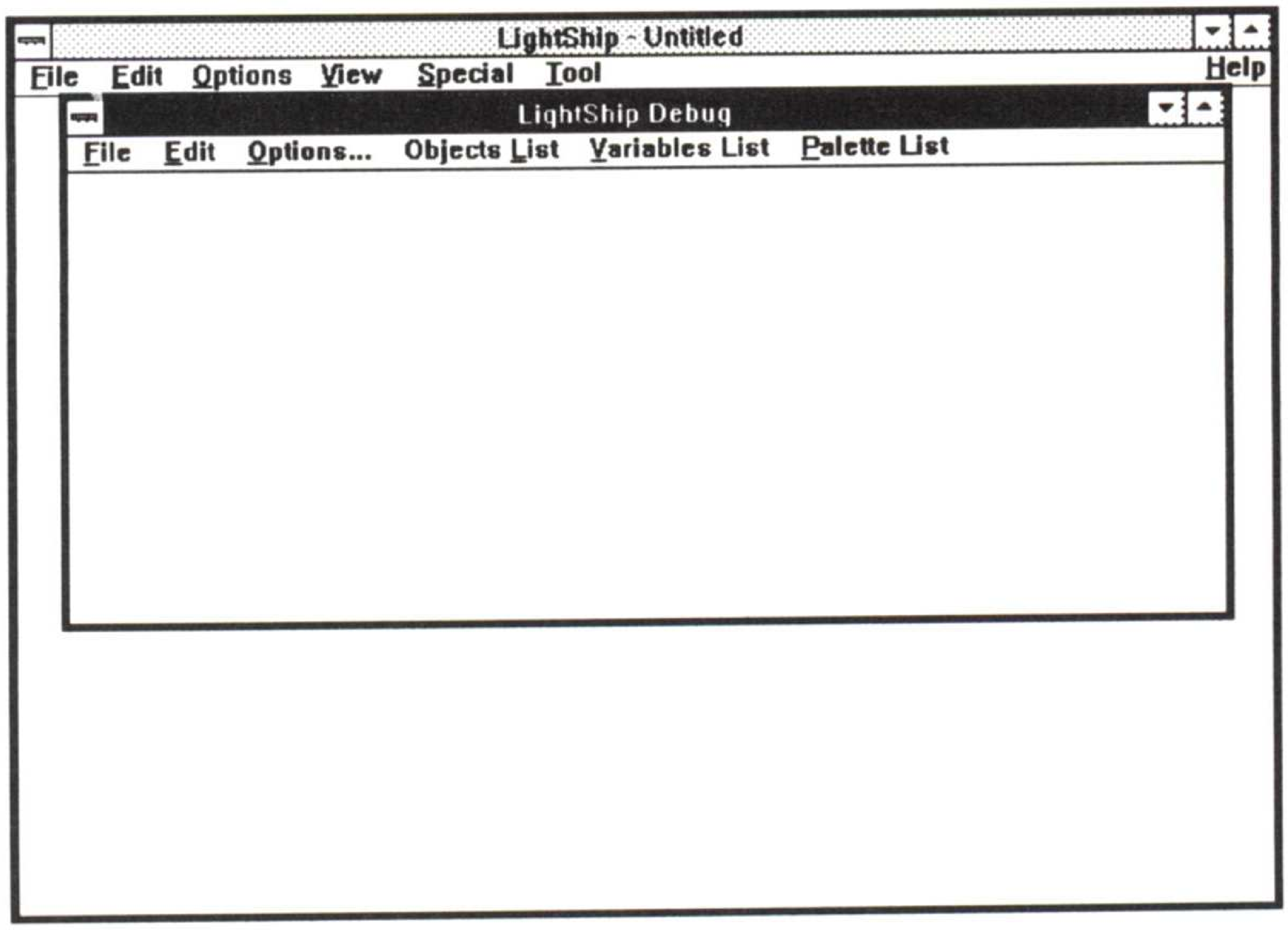

LightShip - Untitled
File Edit Options View Special Tool
Help
LightShip Debug
File Edit Options... Objects List Variables List Palette List

Figure 11-2 The LightShip Debug Window

LightShip Debug

The Debug window has a Control menu and Maximize and Minimize boxes. You control the window in the same way that you would any window, except that when you close LightShip, the Debug window closes with it. When you minimize it, it becomes an icon, which you can double-click on to activate.

The Menu Bar

The menu bar displays the following menu items:

- The File menu allows you to print the screen and exit from the Debug window.
- The Edit menu allows you to copy and clear the screen.
- The Options command lets you control what is displayed and the way it is output.
- The Objects List command lists the objects on the screen and their attributes.
- The Variables List command lists the current variable values.

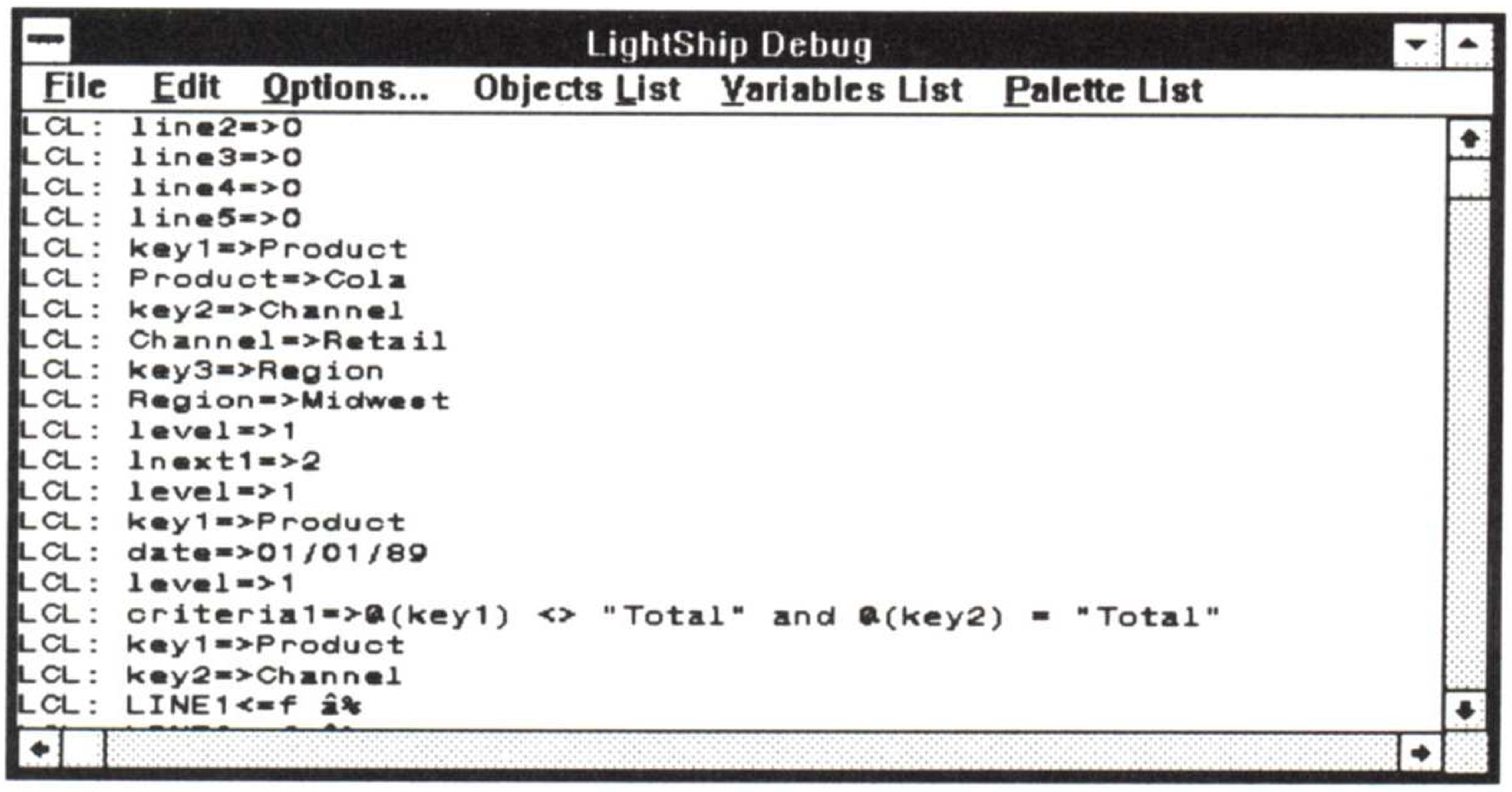
- The Palette List command lists the current RGB numbers for the colors in the palette.

Displaying Information in the Window

Depending on the settings in the Debug Options dialog box, parameter values or actions may list automatically in the window after you execute actions. For example:

1. Open the Debug window.
2. To start with a clear screen, choose Edit Clear.
3. Switch to a LightShip application screen.
4. Execute one or more actions.
5. Switch back to the Debug window again.

   If you have executed actions and have not changed the default settings in the Debug Options dialog box, the Debug window lists local and global parameter values.



```
LCL: line2=>0
LCL: line3=>0
LCL: line4=>0
LCL: line5=>0
LCL: key1=>Product
LCL: Product=>Cola
LCL: key2=>Channel
LCL: Channel=>Retail
LCL: key3=>Region
LCL: Region=>Midwest
LCL: level=>1
LCL: lnext1=>2
LCL: level=>1
LCL: key1=>Product
LCL: date=>01/01/89
LCL: level=>1
LCL: criteria1=>@(key1) <> "Total" and @(key2) = "Total"
LCL: key1=>Product
LCL: key2=>Channel
LCL: LINE1<=f â%
```

Figure 11-3 Displaying Information in the Window

Labels

A label on the left side of the screen identifies the information.

Table 11-1 Debug Window Labels

Label	**Stands For**
LCL	local parameter
GBL	global parameter
VAR	variable
ACT	action
OBJ	object
PAL	palette

Copying the Window

- **To copy the information in the window to the Clipboard:**

Choose Edit Copy or press CTRL+INS.

Clearing the Window

- **To clear the Debug window:**

Choose Edit Clear or press SHIFT+DEL.

Closing the Window

- **To close the Debug window and return to the main screen:**

Turn off Debug on the main LightShip screen.

Or

Choose Control Close, press ALT+F4, or choose File Exit in the Debug window.

Setting Debug Window Options

The Options command on the Debug window allows you to specify:

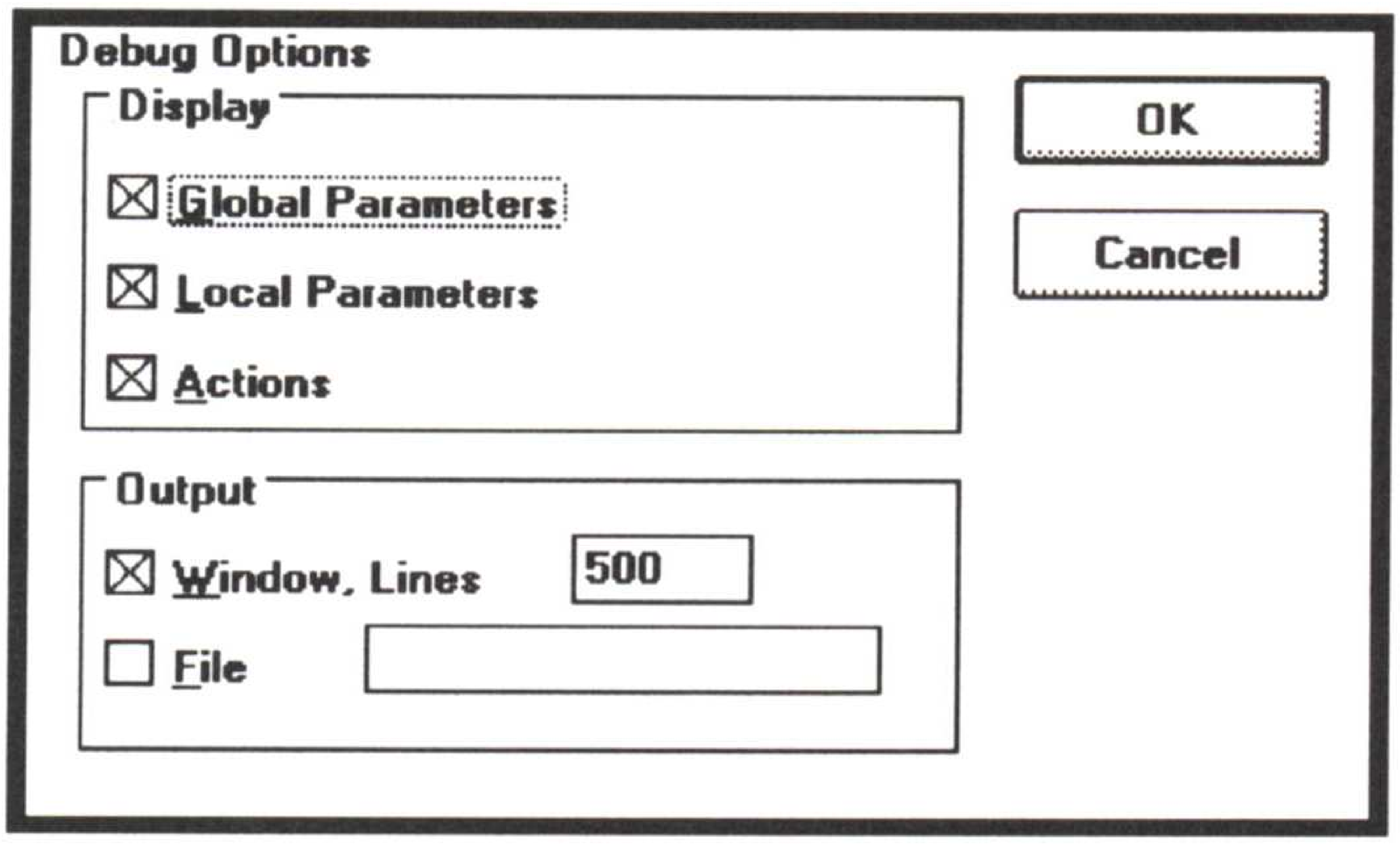
- Number of lines to display in the window
- Whether to list local or global parameters
- Whether to list actions
- Whether to list information in the window or in a file, or both

Setting Debug Window Options

■ **To set Debug window options:**

Choose Options.

A dialog box appears.



☒ Global Parameters

☒ Local Parameters

☒ Actions

☒ Window, Lines 500

☐ File

Figure 11-4 The Debug Options Dialog Box

Listing Information in the Window

When you list information in the window, LightShip lists as many lines as are specified in the Debug Options dialog box. When LightShip reaches the maximum number of lines specified, it erases lines from the top of the list as it adds new lines at the end.

To list information in the window and control the number of lines in the list:

1. Leave the Window, Lines check box on to list information in the Debug window.

2. In the Window, Lines text box, type a number from 50 to 500 to set the maximum number of lines you want to list in the window.

Writing to a File

You can write the information in the Debug window to an ASCII text file. The information is written to the file when the actions are executed or when you choose Objects List or Palette List. You can print the file from the Windows Notepad or the DOS command line.

To write information to a file:

1. Turn on the File check box.

2. Type the filename to which you want to write the information in the File text box.

   You can optionally add an extension to the filename. LightShip does not provide a default extension.

Saving the Settings

There are three ways to save the settings in the Debug Options dialog box:

- Turn on Save Prefs. on Exit in the Preferences dialog box.

- Turn on Query Save on Exit in the Preferences dialog box and press ENTER when you are prompted to save the settings when you exit from LightShip.

- Turn on Save Settings and choose OK.

Tracing Parameter Values

The parameter list is different from the variable list. The variable list shows the current value of all variables. The parameters list only displays parameter values after an action has occurred, for example, when a new value is assigned or when Lightship retrieves a value. A parameter assignment statement *assigns* a value. The symbol, :=, indicates that the value was assigned. The symbol, =>, indicates that the value was retrieved.

Local parameters are identified by an LCL label. Global parameters are identified by a GBL label.

■ **To list parameter values:**

1. Make sure the Global Parameters and Local Parameters check boxes in the Debug Options dialog box are set correctly.
2. Minimize the Debug window or Switch to the LightShip application screen window.
3. Execute one or more actions.
4. Restore or Switch to the Debug window again.

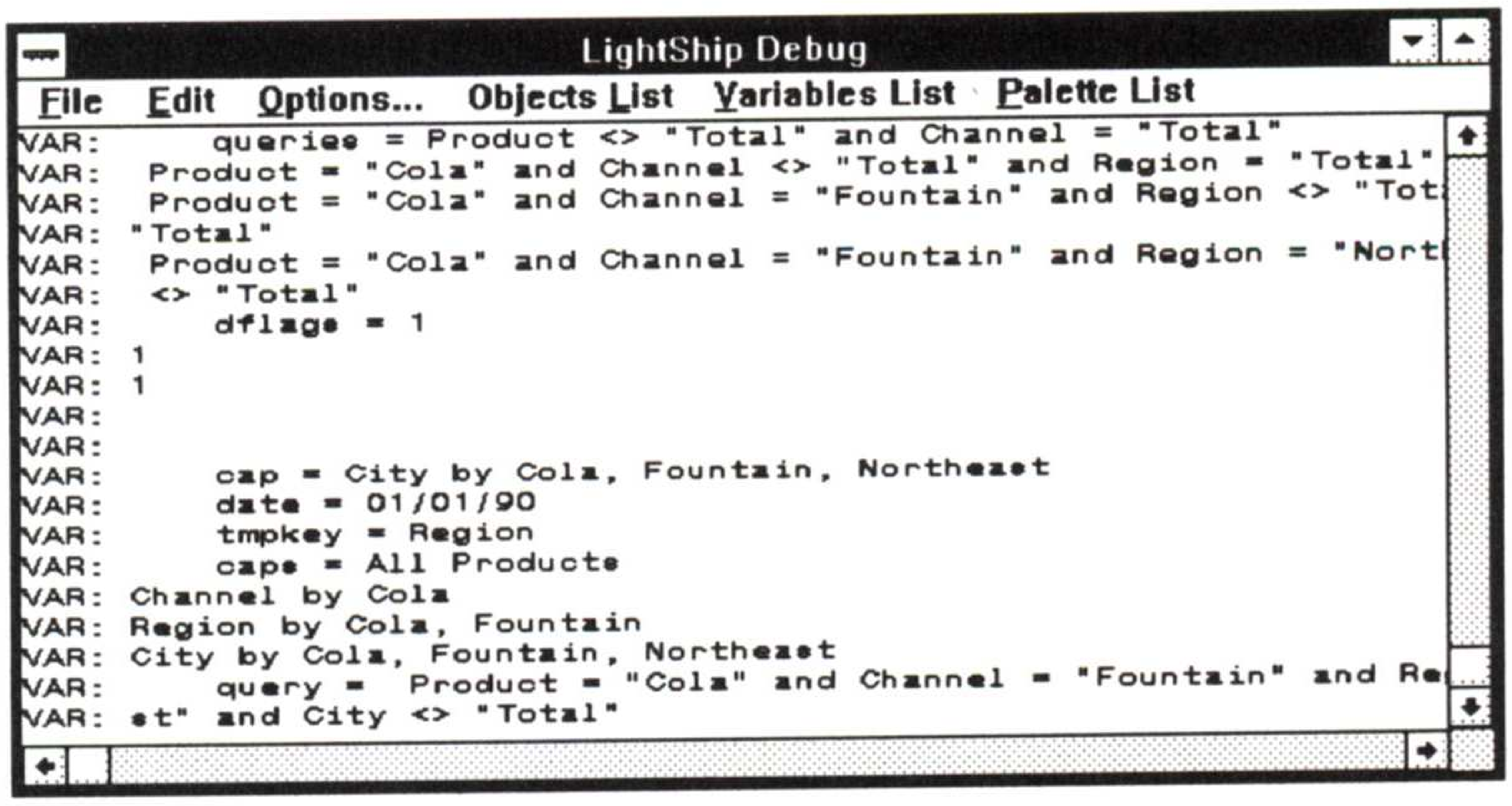
Listing Variable Values

The variable list shows the current value of all variables.

■ **To list the current variable values:**

Choose Variables List.

The variable values appear next to the variable name and an equals sign. The label VAR displays on the left side of the window.



```
VAR:      queries = Product <> "Total" and Channel = "Total"
VAR:   Product = "Cola" and Channel <> "Total" and Region = "Total"
VAR:   Product = "Cola" and Channel = "Fountain" and Region <> "Tot
VAR:  "Total"
VAR:   Product = "Cola" and Channel = "Fountain" and Region = "Nort
VAR:   <> "Total"
VAR:      dflags = 1
VAR:  1
VAR:  1
VAR:
VAR:
VAR:      cap = City by Cola, Fountain, Northeast
VAR:      date = 01/01/90
VAR:      tmpkey = Region
VAR:      caps = All Products
VAR:  Channel by Cola
VAR:  Region by Cola, Fountain
VAR:  City by Cola, Fountain, Northeast
VAR:      query =  Product = "Cola" and Channel = "Fountain" and Re
VAR:  st" and City <> "Total"
```

Figure 11-5 Listing Variables

Tracing Actions

To trace actions:

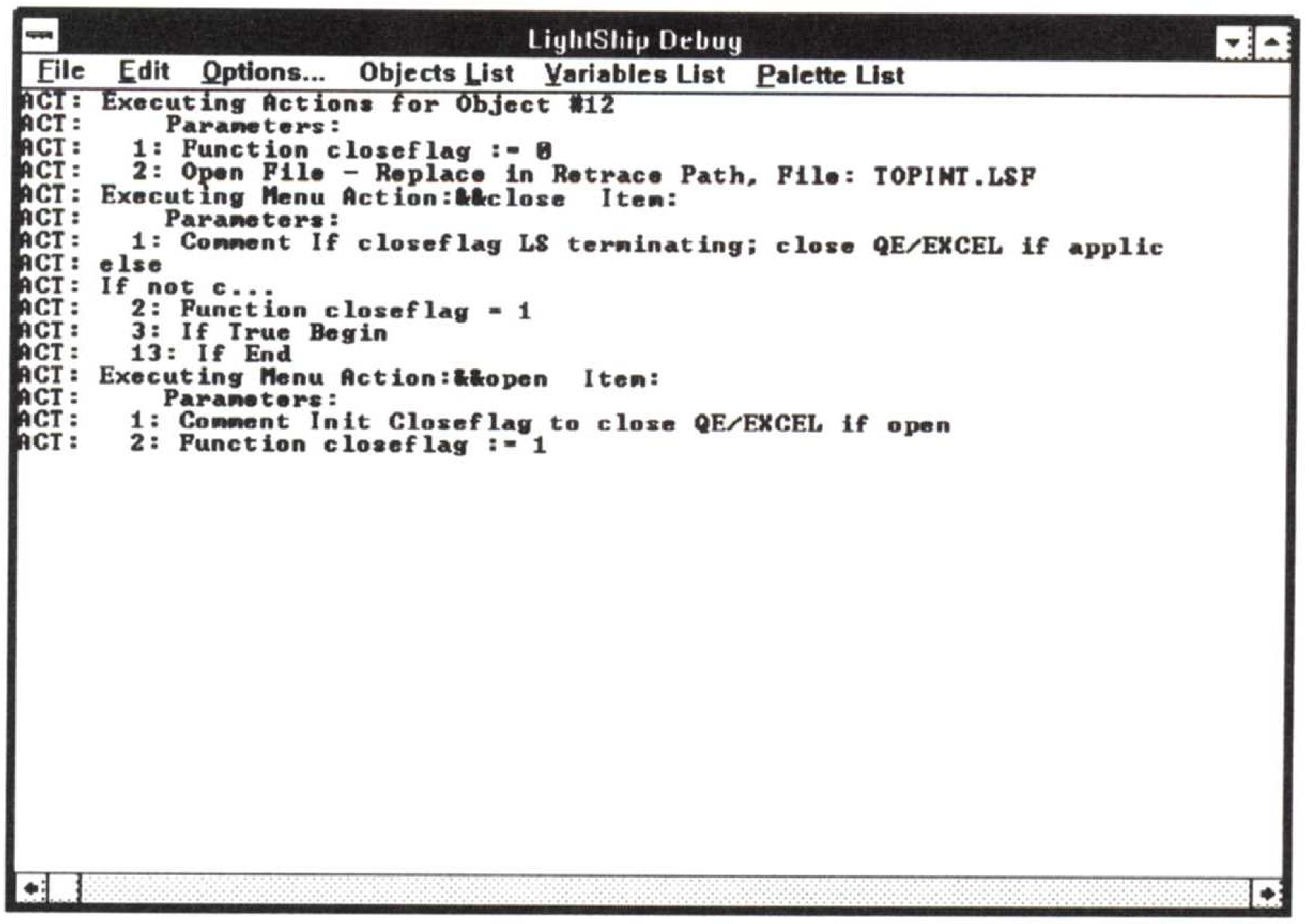
1. Make sure the Actions check box in the Debug Options dialog box is on.
2. Minimize the Debug window or Switch to the LightShip application screen window.
3. Execute one or more actions.
4. Restore or Switch to the Debug window again.

   Variable assignments are listed first, followed by the actions that were executed. Each action appears next to an ACT label as:

   `Executing Actions for Object #n.`

   where *n* is the number of the object.

If you have Global Parameters or Local Parameters turned on in the Debug Options dialog box, these appear as they are assigned or retrieved.



```
ACT: Executing Actions for Object #12
ACT:      Parameters:
ACT:   1: Function closeflag := 0
ACT:   2: Open File - Replace in Retrace Path, File: TOPINT.LSF
ACT: Executing Menu Action:&&close  Item:
ACT:      Parameters:
ACT:   1: Comment If closeflag LS terminating; close QE/EXCEL if applic
ACT: else
ACT: If not c...
ACT:   2: Function closeflag = 1
ACT:   3: If True Begin
ACT:   13: If End
ACT: Executing Menu Action:&&open  Item:
ACT:      Parameters:
ACT:   1: Comment Init Closeflag to close QE/EXCEL if open
ACT:   2: Function closeflag := 1
```

Figure 11-6 Listing Actions

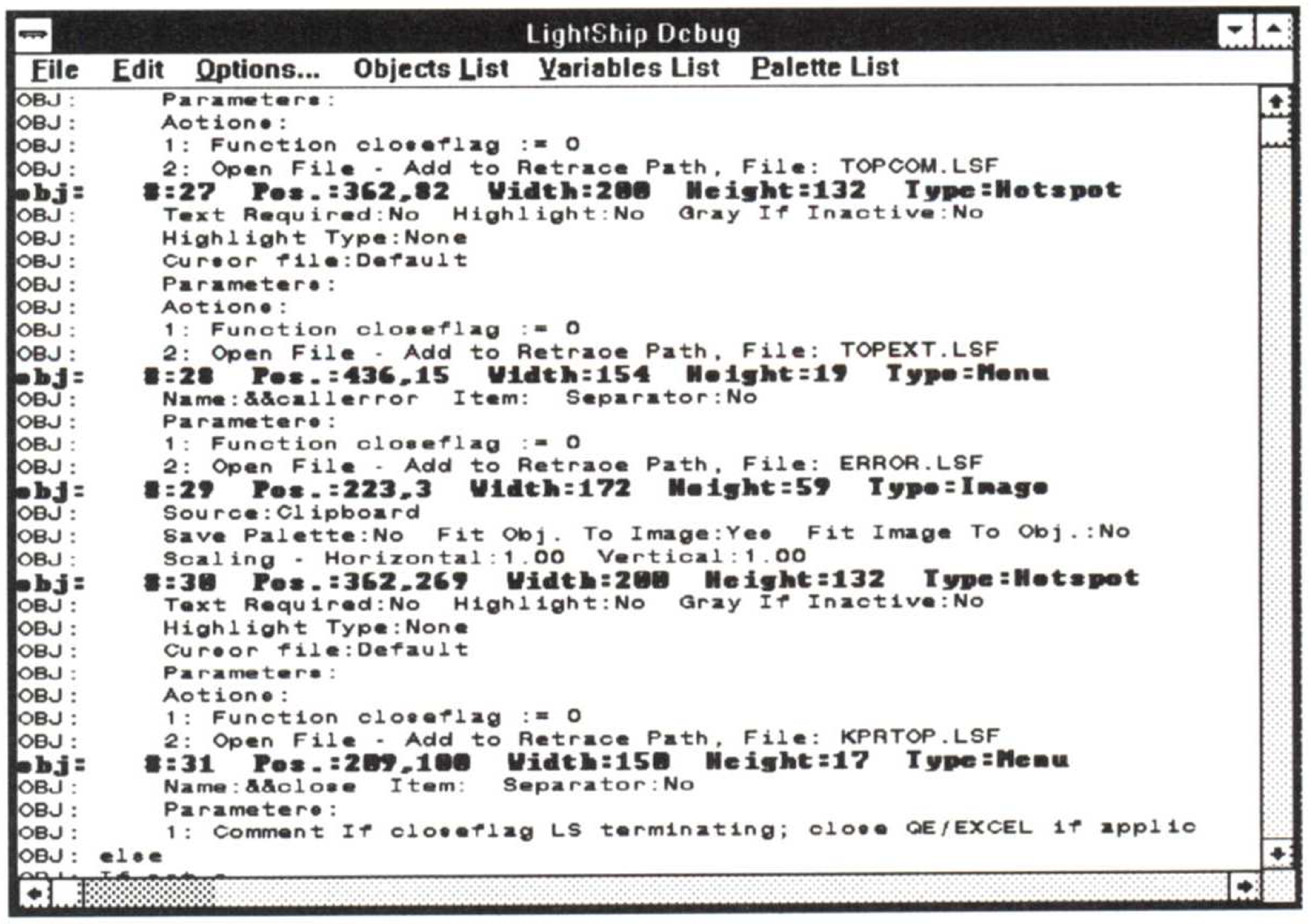
Listing Object Information

You can list all the objects on the current screen next to the label OBJ. Objects list from back to front and are identified with a number. The lowest number is the object that is behind all other objects and the highest number is the object that is in front of all other objects.

The object type, screen position, and all other attributes associated with each object are also listed. The total number of objects on the screen appears at the end of the list.

- **To list information about objects on the current screen:**

Choose Objects List.



```
OBJ:       Parameters:
OBJ:       Actions:
OBJ:       1: Function closeflag := 0
OBJ:       2: Open File - Add to Retrace Path, File: TOPCOM.LSF
obj:    #:27  Pos.:362,82  Width:200  Height:132  Type:Hotspot
OBJ:       Text Required:No  Highlight:No  Gray If Inactive:No
OBJ:       Highlight Type:None
OBJ:       Cursor file:Default
OBJ:       Parameters:
OBJ:       Actions:
OBJ:       1: Function closeflag := 0
OBJ:       2: Open File - Add to Retrace Path, File: TOPEXT.LSF
obj:    #:28  Pos.:436,15  Width:154  Height:19  Type:Menu
OBJ:       Name:&&callerror  Item:  Separator:No
OBJ:       Parameters:
OBJ:       1: Function closeflag := 0
OBJ:       2: Open File - Add to Retrace Path, File: ERROR.LSF
obj:    #:29  Pos.:223,3  Width:172  Height:59  Type:Image
OBJ:       Source:Clipboard
OBJ:       Save Palette:No  Fit Obj. To Image:Yes  Fit Image To Obj.:No
OBJ:       Scaling - Horizontal:1.00  Vertical:1.00
obj:    #:30  Pos.:362,269  Width:200  Height:132  Type:Hotspot
OBJ:       Text Required:No  Highlight:No  Gray If Inactive:No
OBJ:       Highlight Type:None
OBJ:       Cursor file:Default
OBJ:       Parameters:
OBJ:       Actions:
OBJ:       1: Function closeflag := 0
OBJ:       2: Open File - Add to Retrace Path, File: KPRTOP.LSF
obj:    #:31  Pos.:289,100  Width:150  Height:17  Type:Menu
OBJ:       Name:&&close  Item:  Separator:No
OBJ:       Parameters:
OBJ:       1: Comment If closeflag LS terminating; close QE/EXCEL if applic
OBJ:  else
```

Figure 11-7 Listing Objects

Selecting an Object

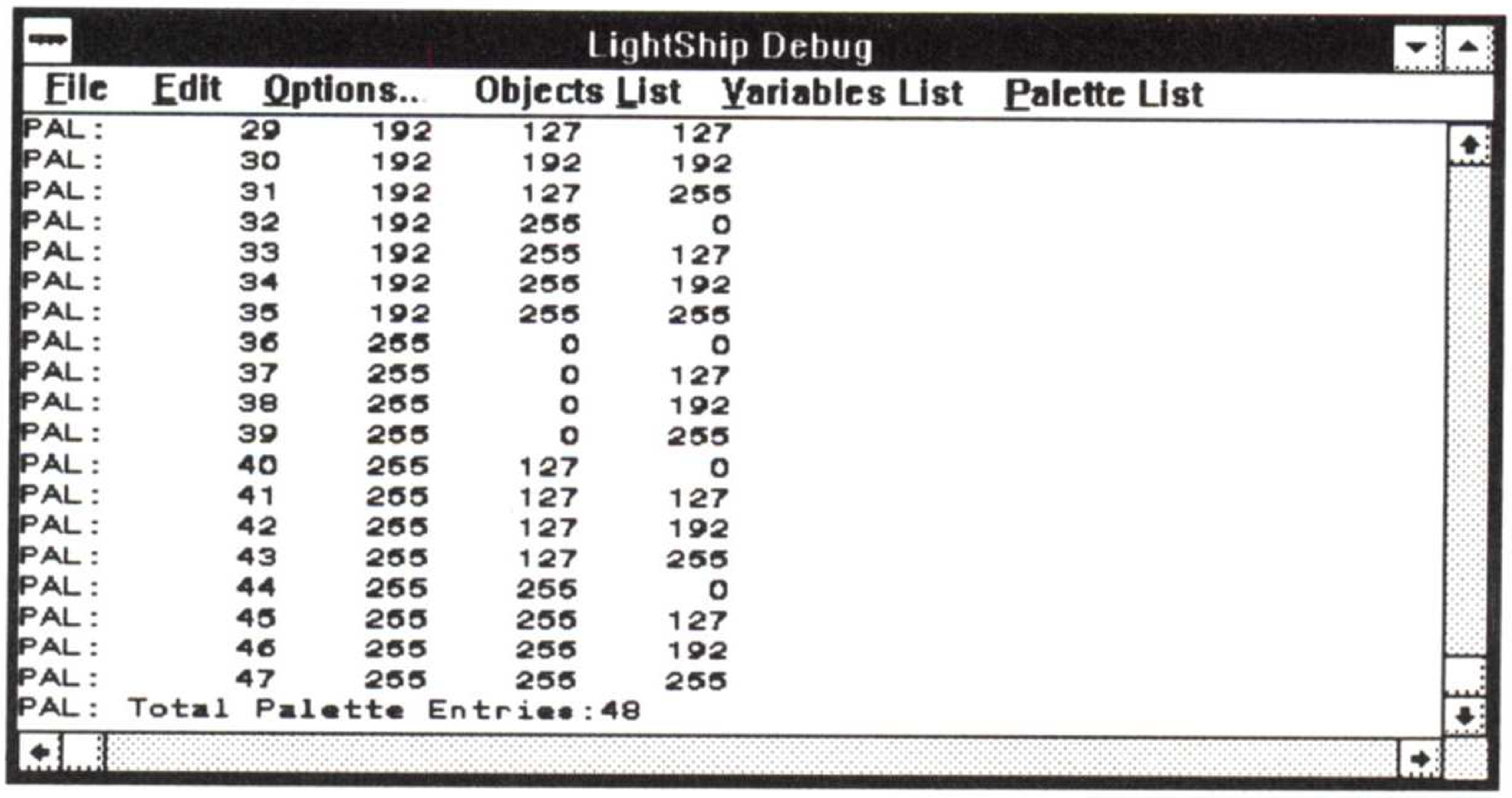
You can select an object on the LightShip screen by double-clicking on the line that identifies the object in the Debug window. This line is in bold type next to the lowercase label **obj**. The cursor changes to an up arrow when it is over one of these special object lines.

Listing Palette Numbers

The Palette List command lists the RGB numbers for all the colors on the palette, next to the label PAL.

- **To list the RGB numbers for the palette:**

Choose Palette List.



```
PAL:         29     192     127     127
PAL:         30     192     192     192
PAL:         31     192     127     255
PAL:         32     192     255       0
PAL:         33     192     255     127
PAL:         34     192     255     192
PAL:         35     192     255     255
PAL:         36     255       0       0
PAL:         37     255       0     127
PAL:         38     255       0     192
PAL:         39     255       0     255
PAL:         40     255     127       0
PAL:         41     255     127     127
PAL:         42     255     127     192
PAL:         43     255     127     255
PAL:         44     255     255       0
PAL:         45     255     255     127
PAL:         46     255     255     192
PAL:         47     255     255     255
PAL:  Total Palette Entries:48
```

Figure 11-8 Listing the Palette Numbers

The first number is the index, or the number of the color on the palette. The second number identifies the amount of red in the color. The third number identifies the amount of green in the color. The last number identifies the amount of blue in the color.

Printing the Debug Window

- **To print the information in the Debug window:**

Choose File Print.

Tracking Errors

LightShip creates an error log file that records any errors that occur. The log file has the extension, .LOG, and is named after the LightShip executable file. For example, if your executable file is called LS.EXE, the log file is named LS.LOG.

The log file records the date and time that the error occurred, the pathname and filename of the file that was running, and what the error was.

New errors are appended to the end of this file. We recommend erasing this file periodically to prevent it from becoming too large.

Types of Errors

When an error occurs, LightShip displays a message on the screen. There are three types of error messages:

Warning	A warning message provides information; it is not as serious as an error. Warning messages are always displayed on the screen at both the Author and Browse levels, but are only output to the error log file at the Browse level.
Error	An error message means that something has happened that prevents the program from continuing. Error messages often tell you what you can do to correct the error.
Crash	A crash message tells you that the application has an unrecoverable error and is terminating.

⁂

Chapter 12

Using Dynamic Data Exchange

This chapter describes Microsoft's Dynamic Data Exchange (DDE) protocol and how LightShip uses it to communicate with other Windows applications. It also shows examples of DDE Requests and DDE Executes.

What is Dynamic Data Exchange?

Microsoft Windows Dynamic Data Exchange (DDE) is a method that allows applications to communicate with each other. The program that initiates communication is the *client* and the program that responds is the *server*. A communication link between a client and a server is called a *channel*. The client controls the channel and requests services from the server.

DDE Transactions

DDE provides *transactions* to allow communication between a client and server. For example, the Initiate transaction opens a channel, the Request transaction gets data, and the Terminate transaction ends the communication and closes the channel. The Advise transaction establishes a hotlink between applications, so that data is automatically updated in the client whenever it changes in the server. Most applications support only a portion of all transactions provided by DDE.

Specifying the Server Application

When you use DDE, you specify the server application and data to be exchanged with the following fields:

- Application
- Topic
- Item

The *application* is the name of the server application, without the .EXE extension.

The *topic* identifies a data group or entity you want to access, often the name of a window or a filename in the server application.

The *item* is a data object that can be passed in a DDE data exchange, for example, specific rows and columns of data.

LightShip and DDE

LightShip uses DDE to retrieve data from other applications and send commands to them. Document objects and image objects can retrieve data with DDE and hotspots and menu objects can send commands with DDE.

LightShip can communicate with any Windows application that conforms to DDE protocol, including Microsoft Excel, Word, PowerPoint®, Pioneer Q+E database editor, Precision Software Superbase4®, and Compete! Modeler™. LightShip only supports the role of client; it cannot function as a server.

Supported Transactions

Besides Initiate, Advise, and Terminate, LightShip supports two DDE transactions:

- Request
- Execute

A *Request* retrieves data from the server and establishes a data link.

An *Execute* sends commands to the server. To see the commands your server application supports, refer to that application's documentation.

Hotlinks

LightShip supports DDE hotlinks, which means that once a data link is established, the data is updated automatically in LightShip whenever it changes in the server. Hotlinks are only supported when Special Calculation Automatic is on.

Number of Channels

All DDE communication between applications occurs on a channel. You can open up to 20 channels on a LightShip screen.

Syntax for Application and Topic

The syntax of the Application and Topic fields are the same for both DDE Requests and DDE Executes. The application name is limited to 32 characters. The topic cannot exceed 255 characters. On DDE Requests, the item also cannot exceed 255 characters. If this is a problem, you might be able to request data using a DDE Execute if the server application supports a DDE Execute command that requests data. For examples, see "DDE Executes."

For information about the syntax for the Item field for a Request, see "DDE Requests." For information about the syntax for the Item field for an Execute, see "DDE Executes."

Application

For the application, type the name of the server application (without the .EXE extension). For example, for Excel, type:

```
excel
```

or for Q+E, type:

```
qe
```

Topic

The topic identifies a data group or entity in the server. It is usually a filename or the name of a window in the server application. There is also a special topic called *System*. The System topic is used in different ways, depending on the application; it usually provides a context for items of information that might be of general interest to an application. Refer to your application's documentation to see what System items it supports.

Excel Example

For Excel, the topic can be System or the name of an open file. For example:

```
system
```

or

```
annual.xls
```

Q+E Example

For Q+E, the topic can be a Query Window Name, a Query File Name, a SELECT statement, or System. If you reference a .QEF file, Q+E opens the file automatically. For example:

```
annual.qef
```

DDE Requests

Document objects and image objects can perform DDE Requests. A DDE Request retrieves data from the server and establishes a data link. The link only exists if both applications are running and the topic is open.

When Data Is Updated

When Calculation Automatic is on, LightShip updates data whenever it changes in the server. LightShip also updates data when a screen opens or when a variable reference in a DDE Request changes. When Calculation Manual is on and you make a literal change in the DDE Request dialog box, LightShip prompts you to execute the request. Otherwise, when Calculation Manual is on, LightShip only updates DDE data when a screen opens or when you issue a Special Calculate Now command.

Format

LightShip can send DDE Requests for text (CF_TEXT) and bitmap (CF_BITMAP) formats.

Defining a DDE Request

To define a DDE Request, create or select a document or image object and choose the Document Source or Image Source command. When you specify a DDE Request as the source for a document or image object, the DDE Data Request dialog box opens.

The syntax of the Request depends on the application. This section shows examples from various applications, but you must also refer to the documentation of the server application.

The Paste Link Option

If the server supports the Link format, the Paste Link option on the DDE Data Request dialog box is the easiest way to request data. It allows you to go to the other application and copy the data you want to the Clipboard. When you click the Paste Link button on the DDE Data Request dialog box, LightShip fills out Application, Topic, and Item on the dialog box for you. For more information on using Paste Link, see *Chapter 4: Displaying Data*.

Syntax for the Item

The *item* is a data object that can be passed in a DDE transaction.

Excel Examples

To retrieve data from Excel, type any reference or name that is recognized by Excel. For example:

```
R1C1:R15C15
```

or

the name of a range of cells (defined by the Excel Define Group command).

Q+E Examples

Q+E most commonly accepts an area specification for the item. For example, to get all the data in the Query Window, type:

```
all
```

To get the data from the first to the fifteenth rows, and the first to the fifteenth columns, type:

```
R1C1:R15C15
```

Breaking Out of a DDE Request

When you send a DDE Request or Execute, if there is no response within a certain amount of time, LightShip quits looking for a response and displays a message that the Request or Execute timed out. If you do not want to wait for LightShip to time out, you can break out of a DDE Request or Execute manually.

■ **To break out of a DDE Request or Execute immediately:**

Press the ESC key.

Controlling Time Outs

LightShip controls the amount of time to wait for a time out with the following settings:

- DDE Short Timeout
- DDE Long Timeout

The DDE Short Timeout, which is set to 10 seconds by default, is used for actions that do not require much time, such as DDE Requests or Acknowledgments.

The DDE Long Timeout, which is set to 60 seconds by default, is used for actions that require more time, such as sending DDE Executes.

You can change these settings on the View Preferences dialog box. LightShip saves the settings in your LS.INI file. For more information, see the View Preferences command in the *LightShip Reference Guide*.

DDE Executes

A DDE Execute is one of the actions available to hotspots and menu objects. A DDE Execute sends commands to the server. The server application provides the commands you can send as the item in the DDE Execute transaction.

Using DDE Executes

DDE Executes are most often used for closing windows, sending information to the server application, or exiting from the server application. DDE Execute commands that close windows or exit from applications are usually triggered by an &&Close menu object. It is most efficient to close down an application only once when you are completely finished with it, rather than open and close it multiple times during a session.

Defining a DDE Execute

To define a DDE Execute, create or select a hotspot or menu object and choose Actions from the object's menu. Then choose *DDE Execute* from the list of actions. The DDE Execute Action dialog box opens.

Syntax for the Item

The *item* is a data object that can be passed in a DDE transaction. For Excel and Q+E, use a text value of command-equivalent macro functions. To see the commands your server application supports, refer to that application's documentation. The item in a DDE Execute is always enclosed in brackets ([]).

Excel Examples

For example, this item instructs Excel to open the file c:\excel\annual.xls:

```
[open("c:\excel\annual.xls")]
```

☞ **Important**

Note that when Excel shows two backslashes (\\) or two double quotes ("") as part of the Execute syntax, only enter one of them (\ or ") in LightShip or you will receive an error message.

The following item sends the number "600" to the cell in row 1 column 3:

```
[formula(600,r1c3)]
```

The Microsoft Excel FORMULA macro function enters the formula specified by the first argument into the cell specified by the second argument. For more information about this and other Excel macro functions, see the *Microsoft Excel Functions and Macros* manual.

Q+E Example

The following example of an Execute item uses a .QEF file as the topic. This item creates records in Q+E by passing parameters from LightShip to Q+E:

```
[allow.edit(true)][paste.append(’@(h1)’)]
[keys(’{tab}@(h2){tab}@(h3){tab})’]
[Close()]
```

The ALLOW.EDIT command allows modification of data in the Query Window if it is set to true. The PASTE.APPEND command adds new records using values on the Clipboard or values passed as parameters. The KEYS command sends one or more keys to Q+E to be executed. The Close command closes the active window.

Q+E Example

The following example would use System as the topic. This item also sends information to Q+E:

```
[open(’@(path)store.dbf’,‘dbasefile’)]
[allow.edit(true)][select.area
(’r1c1:r4c2’)][keys(’@(key1){tab}@(key2)
{tab}@(key4)’][close()]
```

The OPEN command opens a Query Window. The first argument in this example specifies the file and file type. The SELECT.AREA command highlights the area specified by the rowcol:rowcol argument that follows it. See the *Q+E User’s Guide* for more information about these and other DDE Execute commands.

Closing a Server Application

Executing a DDE Request or Execute starts a server application, but does not close it.

■ **To close the server application:**

Create an &&Close menu object with a *DDE Execute* action to send DDE Close and Quit commands to the server. &&Close is an event-driven menu object that executes actions when a screen closes. For more information about &&Close, see *Chapter 7: Creating Menu Objects*.

* * *

Appendix A

Starting LightShip from .LSF Files

This appendix describes how to start LightShip from .LSF files.

Starting LightShip from .LSF Files

You can edit your WIN.INI file so that you can start LightShip by double-clicking on a file with a .LSF extension.

1. Go to the Windows Program Manager.
2. Open the NOTEPAD.
3. Choose File Open.
4. For the filename, type:

   ```
   win.ini
   ```

5. Choose OK.

   The file WIN.INI opens.

6. Page down to the place in the file with the header [Extensions].
7. Add the following line using the correct path:

   ```
   lsf=[pathname]\ls.exe ^.lsf
   ```

8. Choose File Save.

9. Choose File Exit.
10. Exit from Windows and restart it.

⁂

Appendix B

LS.INI Options

This appendix describes the settings in LS.INI.

What Is LS.INI?

LightShip's default system settings are saved in a startup file, which is stored in your Windows system directory. This file initializes system settings when LightShip starts. The startup file is called LS.INI by default. However, if you rename your executable file, LightShip uses the executable filename with an .INI extension.

The default system settings are set in different places: in the Preferences dialog box; on the View or Special menus; and some are set internally by LightShip. Table B-1 shows the source and default value of each system setting.

Changes you make to system settings are saved if you:

- Choose Save on the Preferences dialog box.
- Turn on the Save on Exit option in the Preferences dialog box.
- If you turn on the Query Save on Exit option and then answer Yes in response to LightShip's prompt to save settings.

Choosing the Save or OK buttons on the Preferences dialog box issues a Calculate Now command and completely repaints the screen.

LS.INI Options

There may be different sections in your LS.INI. Section headings are in square brackets. The first line of the file is the [LightShip] section heading.

In the table shown below:

- Device means device-dependent
- View means View menu
- Pref means Preferences dialog box
- Spec means Special menu

Table B-1 LightShip Default Settings

Source	**Setting**	**Default**	**Description**
	[LightShip]		Section heading.
Internal	Maximized	Off	Window maximized or not.
Internal	Left	Device	Horizontal coordinate of upper-left corner of main window.
Internal	Top	Device	Vertical coordinate of upper-left corner of main window.
Internal	Width	Device	Width of main window.
Internal	Height	Device	Height of main window.
Internal	Toolbox	Off	Toolbox displayed or not.
Internal	Status	Off	Status box displayed or not.
Internal	Debug	Off	Debug window on or off.

Table B-1 LightShip Default Settings (continued)

Source	Setting	Default	Description
Internal	AuthorDisabled	Off	Author level disabled or not. When this is on, you cannot go to the Author level from the Browse level.
Internal	Browse	Off	Browse level on or off.
Internal	Capture	Off	Capture level on or off.
View	GridSnap	Off	Grid Snap on or off.
View	GridDots	Off	Grid lines displayed or not.
View	GridHorizontal	0.50	Increments between horizontal grid lines.
View	GridVertical	0.50	Increments between vertical grid lines.
Pref	FastRunPaint	Off	Direct Browse Level Painting on or off. When on, objects are repainted individually at the Browse level, which gives the appearance of faster performance.
View	ShowHotspots	Off	Hotspots are outlined or not.
View	OutlineObjects	Off	All objects are outlined or not.
View	ShowHiddenObjects	Off	Hidden objects are displayed or not.
View	NoFormat	Off	Disable Formats is on or off. When on, formatting is turned off at the Author level.
Pref	Logo	On	The startup banner is displayed when LightShip starts.

Table B-1 LightShip Default Settings (continued)

Source	**Setting**	**Default**	**Description**
Pref	DDE_Short_TimeOut	10	Time to wait before timing out on DDE Requests.
Pref	DDE_Long_TimeOut	60	Time to wait before timing out on DDE Executes.
Pref	SaveGlobals	On	Save globals or not.
Pref	QuerySave	On	Prompt to save settings on exit from LightShip or not.
Pref	SaveOnExit	On	Save settings on exit from LightShip without prompting or not.
Special	CreateInBackground	Off	Create new objects from front to back instead of from back to front.
Pref	Redraw	On	Repaint screen when moving objects or not. Performance is faster when this is off.
Pref	PrintAsBitmap	Off	When off, prints a screen using Windows settings and fonts. When on, prints a screen in bitmap format.
Pref	CreateBAK	On	When on, creates a backup file.
	[Toolbox]		Section heading.
Internal	ToolboxLeft	Device	Horizontal coordinate of upper-left corner of Toolbox.
Internal	ToolboxTop	Device	Vertical coordinate of upper-left corner of Toolbox.

Table B-1 LightShip Default Settings (continued)

Source	**Setting**	**Default**	**Description**
	[Status]		Section heading.
Internal	StatusLeft	Device	Horizontal coordinate of upper-left corner of Status box.
Internal	StatusTop	Device	Vertical coordinate of upper-left corner of Status box.
	[Debug]		Section heading.
Internal	DebugLeft	Device	Upper-left corner of Debug window.
Internal	DebugTop	Device	Top of Debug window.
Internal	DebugWidth	Device	Width of Debug window.
Internal	DebugHeight	Device	Height of Debug window.
Internal	DebugOptions	*	This number is the sum of the options in the Debug Options dialog box - see Table B-2.
Internal	DebugLines	50	Number of lines in the Debug window.
Internal	DebugMinimized	Off	Debug window minimized or not.

Table B-2 Debug Option Values

Option	Value
Local parameters	1
Global parameters	2
Display in window	3
Write to file	8
Display actions	16

Saving Global Variables

If you turn on Save Globals in the Preferences dialog box, LightShip adds a [Globals] section in LS.INI and saves the global variables there. You can also type global variables directly into the file, for example:

```
&PATH = C:\LS\;C:\LS\DEMO;
```

⁂

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